

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

LAURA H. THIELEN
CHAIRPERSON

MEREDITH J. CHING
JAMES A. FRAZIER
NEAL S. FUJIWARA
CHIYOME L. FUKINO, M.D.
DONNA FAY K. KIYOSAKI, P.E.
LAWRENCE H. MIKE, M.D., J.D.

KEN C. KAWAHARA, P.E.
DEPUTY DIRECTOR

STAFF SUBMITTAL

for the meeting of the
COMMISSION ON WATER RESOURCE MANAGEMENT

January 22, 2009
Honolulu, Oahu

Gentry Homes, Ltd. and Ewa by Gentry Community Association
APPLICATIONS FOR WATER USE PERMITS
WUP No. 855, Future Irrigation Use, 66,085 gpd (Well No. 1901-08)
WUP No. 856, Modify Existing Irrigation Use to 194,768 gpd (Well No. 2001-05)
WUP No. 857, Modify Existing Irrigation Use to 224,615 gpd (Well No. 2001-12)
WUP No. 858, Modify Existing Irrigation Use to 36,975 gpd (Well No. 1901-05)
WUP No. 859, Future Irrigation Use, 255,108 gpd (Well Nos. 1900-24 and 2000-06)
Puuloa Ground Water Management Area, Oahu

APPLICANTS:

WUP Nos. 855, 857, 858, 859

Gentry Homes, Ltd.
P.O. Box 295
Honolulu, HI 96809

WUP No. 856

Ewa by Gentry Community Association
91-1795 Keaunui Drive
Ewa Beach, HI 96706

LANDOWNER:

Gentry Investment Properties
P.O. Box 295
Honolulu, HI 96809

Ewa by Gentry Community Association
91-1795 Keaunui Drive
Ewa Beach, HI 96706

SUMMARY OF REQUEST:

Gentry Homes, Ltd. and the Ewa by Gentry Community Association (hereinafter referred to as "Gentry," except when discussing details of an individual application or referring to only one applicant) are requesting approval to:

- Modify three existing water use permits (WUPA Nos. 856, 857, and 858) to increase the use of brackish water for irrigation of landscaped areas along roadways within the Ewa by Gentry

development project in Ewa Beach. The total quantity of water requested in these applications is 456,358 gallons per day (gpd). The existing permits allow use of 371,000 gpd for the same purposes.

- Obtain two new water use permits (WUPA Nos. 855 and 859) for new irrigation uses within the Ewa by Gentry development project. The total quantity of water requested in these two applications is 321,293 gpd.
- The total water use requested is 777,551 gpd (0.778 million gallons per day [mgd]).

LOCATION MAP: See Exhibit 1.

BACKGROUND:

On March 3, 1993, the Commission adopted the boundary of the Ewa caprock aquifer as a separate aquifer system area overlying the designated ground water management areas of the Waipahu-Waiawa, Ewa-Kunia, and Makaiwa aquifer system areas. Because of uncertainties regarding the nonpotable utility and sustainable yield of the caprock formation, the Commission had not adopted a sustainable yield estimate for the Ewa caprock aquifer.

Designation of the Ewa caprock aquifer as a water management area was precipitated by the City and County of Honolulu's (City's) urbanization plans for the Ewa Plain and adoption by the City of a local ordinance that requires dual water systems for all new developments. Potable water was to be provided through the municipal system, with non-potable water supply provided by two sources: (1) wells designed to pump from the caprock and (2) treated effluent from the Honouliuli Wastewater Treatment Plant. The projected future demand when this ordinance was adopted was 25 mgd, which is higher than the estimated natural recharge to the caprock aquifer of less than 16 mgd.¹

In 1993, the Commission began approving 1-year temporary permits for new uses of caprock ground water. Temporary rather than permanent permits were issued in response to concerns about the future viability of the caprock to serve as a reliable water source of nonpotable water supply consequent to the loss of return of irrigation recharge from sugar cane agriculture. From 1993 until 2006, the Commission approved only 1-year temporary permits (later called interim permits) for the caprock aquifer. In analyzing water availability, the Commission used guidelines for estimating sustainable yields for the Puuloa, Kapolei, and Malakole aquifer system areas of the Ewa Caprock Aquifer Sector (hereinafter referred to as the caprock aquifer).

On March 13, 1996, the Commission adopted the following policy statement, clearing the way for application of reclaimed water on lands overlying the Ewa Caprock Aquifer Sector Area:

It is the policy of the Commission on Water Resource Management (Commission) to promote the viable and appropriate reuse of reclaimed water in so far as it does not compromise beneficial uses of existing water resources.

¹ Bauer, G.R. 1996. *Reevaluation of the Ground-Water Resources and Sustainable Yield of the Ewa Caprock Aquifer*. Commission on Water Resource Management, Honolulu, HI. September 1996.

I. Ewa Caprock

Recognizing that reclaimed water is a valuable resource in the Ewa Plain, direct or indirect reuse will be championed by the Commission. It is the policy of the Commission that the water resources of the Ewa Caprock Aquifer will be allocated only for nonpotable uses.

On May 14, 1997, the Commission adopted a chloride concentration limit of 1,000 milligram per liter (mg/l) as a basis for regulating water use from wells completed in the caprock aquifer and to prevent degradation of the natural quality of ground water in the caprock aquifer. The intent was to restrict pumpage in any caprock well with a chloride concentration approaching 1,000 mg/l to prevent a build up of sodium in the clayey soils and to protect other adjacent users of caprock water from drawing water with chloride concentrations above 1,000 mg/l. This limit corresponds to the generally accepted upper limit of irrigation-quality water. Thus, in lieu of an aggregate sustainable yield figure, usually expressed as a volume of water, brackish ground water pumped from irrigation wells is required to have chloride concentrations below 1,000 mg/l.

In conjunction with extending annual interim permits during the 1990s and after the millennium, the Commission tracked progress on developing reclaimed water as an alternate source of non-potable supply for well owners in the Puuloa, Kapolei, and Malakole aquifer system areas. On July 20, 2000, an agreement was reached between the Honolulu Board of Water Supply (BWS), the City, and U.S. Filter, allowing the BWS to purchase the Honouliuli Wastewater Treatment Plant and become a purveyor of reclaimed water, with a goal of securing customers for 10 mgd by July 1, 2001. U.S. Filter would operate the plan for BWS under a 20-year service agreement. The City was to provide secondary effluent to the facility and take back 4 mgd of the reclaimed water for reuse by the City. Some of the reclaimed water was intended for use at the Campbell Industrial Park.

On July 18, 2001, the Commission extended the interim water use permits, subject to the standard water use permit conditions and certain special conditions for the caprock aquifer. At that time, the Commission also approved a new special condition that specified the term of interim permits to be through "...July 1, 2006 or (1) until treated wastewater is available and acceptable for use, or (2) until such time that a significant change in permitted, actual, or projected uses of water supply occurs." Additionally, at the July 18, 2001 Commission meeting, staff recommended that the total allocation for the Puuloa Aquifer System Area should not exceed 15 mgd. The quantity of water currently allocated in this system is 14.817 mgd; however, actual pumpage on a 12-month moving average basis (12-MAV) is about one-fourth of this amount (see Exhibit 2).

On July 12, 2006, the Commission converted a total of 26 interim water use permits to permanent permits. This included the three existing permits for Gentry Homes, Ltd. (for Well Nos. 1901-05 and 2001-12) and Ewa by Gentry Community Association (for Well No. 2001-05). The total quantity of water use allowed by these three permits was 0.371 mgd (see Attachment A).

On October 8, 2008, the Commission received four complete water use permit applications from Gentry Homes, Ltd. and one water use permit application from the Ewa by Gentry Community Association. Three of these applications are to modify the existing water use permits that were made permanent on July 12, 2006. Two applications (WUPA No. 855 and 859) are for proposed new uses.

Brackish water is requested for irrigating landscape plantings along roadways within the Ewa by Gentry project and two park areas.

The details of Gentry's five water use permit applications, including source information and a summary of public notices made, are provided in Attachment A. All of the applications are for water that will be used for irrigation of landscape plantings along roadways and some park irrigation within the Ewa by Gentry development. The locations of Gentry's existing and proposed new wells and the corresponding water use permit application (WUPA) number are shown in Exhibit 3. The areas of existing and proposed new uses are delineated in a site plan prepared as part of the Ewa by Gentry Irrigation Master Plan (Exhibit 4).

Applications to Modify Existing Permits

The water use permit modifications requested can be summarized as follows:

- WUPA No. 856 – The Ewa by Gentry Community Association is seeking to increase the allocated quantity for Well No. 2001-05 (under WUP No. 792) from 66,000 gallons per day (gpd) up to 194,768 gpd, for a net change of 128,768 gpd. This part of the development is known as the Sun Terra Tot Lot.
 - The water would be used on multiple TMKs within an area along Kapolei Parkway and within areas generally bounded by Kapolei Parkway, Geiger Road, Fort Weaver Road, and Keaunui Drive. The total land area proposed for irrigation under this permit is 31.3 acres. (See also Exhibit 4.)
 - The proposed use TMKs for WUPA No. 856 are listed in Exhibit 5.
- WUPA No. 857 – Gentry Homes, Ltd. is seeking a modification that will decrease the allocated quantity for Well No. 2001-12 (under WUP No. 793) from 249,000 down to 224,615, for a net reduction of 24,385 gpd. This part of the development is known as Keaunui Area 30.
 - The area covered by this application is bounded generally by Arizona Road to the north, Fort Weaver to the west, Iroquois Road and East-West Loch Road to the south, and various lots around Keaunui Drive. The total land area proposed for irrigation under this permit is 36.09 acres. (See Exhibit 4.)
 - The proposed use TMKs for WUPA No. 857 are listed in Exhibit 6.
- WUPA No. 858 – Gentry Homes, Ltd. is seeking a modification that will decrease the allocated quantity for Well No. 1901-05 (under WUP No. 794) from 56,000 gpd down to 36,975 gpd, for a net reduction of 19,025 gpd. This part of the development is known as Gentry Area 13.
 - The area covered by this application is roadway landscaping along Geiger Road west of Kapolei Parkway, and within the area bounded generally by Geiger Road to the north, Kapolei Parkway to the east, Launahale Street to the south, and the eastern boundary of the Coral Creek Golf Course. The total land area proposed for irrigation under this permit is 5.94 acres. (See Exhibit 4.)
 - The proposed use TMKs for WUPA No. 858 are listed in Exhibit 7.

Applications for New Water Use Permits

The applications for new water uses, both requested by Gentry Homes, Ltd., are for a total of 321,108 gpd that would be supplied by three new wells (Well Nos. 1901-08, 1900-24, and 2000-06), which are not yet constructed.

- WUPA No. 855 – The quantity of water requested is 66,085 gpd, for irrigation uses within the Gentry Area 45 portion of the Ewa by Gentry development.
 - The area covered by this application is within parcels along Kapolei Parkway. The total land area proposed for irrigation under this permit is 10.62 acres. (See Exhibit 4.)
 - The proposed use TMKs for WUPA No. 855 are listed in Exhibit 8.
- WUPA No. 859 – The quantity of water requested is 255,108 gpd, for use on a total of 41.0 acres of roadway landscaping within the Gentry Area 35 portion of the Ewa by Gentry development.
 - The use area covered by this application is bounded generally by the north boundary of the Hawaii Prince Golf Club (located to south of the proposed use area), Fort Weaver Road to the west, Iroquois Road and East-West Loch Road to the north, and Makalea Street and Hoowalea Street to the east. (See Exhibit 4.)
 - The proposed use TMKs for WUPA No. 859 are listed in Exhibit 9.

The specific plant materials proposed for the Ewa by Gentry development, in each of the areas covered by Gentry's five water use permit applications, are listed in Exhibit 10.

Gentry's Water Use Under Existing Permits

A review of Gentry's past water use from the Ewa by Gentry Community Association well (Well No. 2001-05) was 0.052 mgd through September 30, 2008, on a 12-month moving average basis (12-MAV), which is slightly under its allocation of 0.066 mgd (see Exhibit 11). Pumpage from this well has been increasing since approximately April 2008. If the current pattern of increased pumpage continues, water use under this permit could exceed the permitted quantity and lead to a permit violation. The quantity of water requested under WUPA No. 856 is approximately 3 times more than the current permitted quantity. Chloride concentrations in this well have ranged from 754 to 988 mg/l from January 2007 through September 2008, with an average concentration of 852 mg/l.

Pumpage records for the other two wells (Well Nos. 2001-12 and 1901-05) show that Gentry has pumped more water than the amount allocated under its existing permits. The quantity of water drawn from Well No. 2001-12 through September 30, 2008, on a 12-MAV basis, was 0.247 mgd, which is below the current allocation of 0.249 mgd (Exhibit 12). However, before September 2008, the 12-

MAV exceeded the permitted quantity with the average pumpage ranging from 0.276 to 0.303 between December 2007 and August 2008, which is a violation of the permit. Chloride concentrations in this well have ranged from 742 to 928 mg/l from January 2007 through September 2008, with an average concentration of 797 mg/l.

The quantity of water pumped from Well No. 1901-05 through September 30, 2008, on a 12-MAV basis, was 0.123 mgd (Exhibit 13). This is more than double the permitted quantity of 0.056 mgd for this well. Between December 2007 and August 2008, the 12-MAV for this well ranged between 0.140 and 0.168 mgd. These quantities are almost consistently 2.5 to 3 times higher than the allocated quantity; however, Gentry Homes' application to modify the existing permit for this well seeks to reduce the allocation from 0.056 mgd to 0.037 mgd. Chloride concentrations in this well have ranged from 864 to 1,110 mg/l from January 2007 through September 2008, with an average concentration of 987 mg/l. The concentration reported for three months in this period was 1,000 mg/l, and two measurements, reported in March and April 2008, were 1,026 mg/l and 1,110 mg/l, respectively. Concentrations in this well have remained in this range at least since the start of 2007.

ANALYSIS/ISSUES:

Section 174C-49(a) of the State Water Code establishes seven criteria that must be met to obtain a water use permit. An analysis of the proposed permits in relation to these criteria follows.

(1) Water availability

In establishing a sustainable capacity for irrigation wells, the Commission found the following:

1. The Ewa caprock aquifer is a thin basal aquifer vulnerable to salinity intrusion (most salinity profiles indicate sharp salinity changes). Therefore, the quantity of developable water supply depends entirely on well location.
2. Because the caprock aquifer lens is thin, salinity intrusion is a significant limitation, particularly for wells in the makai portion of the aquifer. If ground water withdrawal from the aquifer occurs primarily in mauka areas, more developable supply may be available.
3. The aquifer's main source of recharge is ground water inflow (leakage) from the basalt aquifer at the inland margin of the interbedded coralline rock formations that comprise the Ewa caprock aquifer system. The amount of leakage cannot easily be quantified and is, in part, dependent upon the water levels in the basal aquifer.
4. Sustainable yield is a theoretical number that assumes optimal well placement in an aquifer. The spatial distribution of chloride in the caprock aquifer, however, doesn't fit the notion of managing ground water allocations and withdrawals on the basis of a single sustainable yield pumpage number.

6. The magnitude of tidal influences are equal to or greater than pumping influences and thus makes water-level monitoring as a means for estimating sustainable yield and regulating water use extremely difficult.
7. The caprock aquifer is para-basal inland, which means that the bottom of the aquifer is truncated by the low-permeability clay layer that underlies the upper limestone aquifer.
8. The hydrology of the Ewa caprock aquifer is sufficiently unique to warrant consideration of alternative regulatory considerations. This is particularly appropriate given the change in irrigation returns and availability of reclaimed water to supplement the naturally-occurring recharge.

To respond to concerns about the viability of the caprock aquifer to meet future non-potable water demands in the Ewa region, staff performed quarterly monitoring of water levels and chloride concentrations in select caprock wells from 1994 to 2001. The monitoring network initially included some Malakole aquifer system area wells, but those wells were later dropped due to mainly industrial needs not dependent upon chloride concentrations and the focus placed on irrigation wells in the Kapolei and Puuloa aquifer systems in response to irrigation development pressures within the eastern portion of the Ewa Plain.

A total of 63 permitted and registered wells are known to be within the Puuloa Aquifer System Area (see Exhibit 14). Wells in the vicinity of the Ewa by Gentry development project are included in Exhibit 1. Brackish water from the caprock aquifer within this area is used primarily for a variety of irrigation purposes, as follows:

- Landscape and/or park irrigation (IRRLA, IRRPA) – 19 wells
- Golf course irrigation (IRRGc) – 19 wells
- Agriculture (crops and processing) (AGRCP) – 1 well (U.S. Navy)
- Habitat maintenance (IRRHM) – 1 well (U.S. Fish and Wildlife Service)

Of the remaining wells, two are permitted for industrial use (Well Nos. 1902-03 and -04), one is permitted for domestic use (Well No. 1901-02), ten are recorded as unused, four are maintained as observation (monitor) wells, and six are abandoned.

The total permitted quantity of water from the Puuloa Aquifer System Area is 14.817 mgd, allocated through 24 active water use permits (see Exhibit 2). The water use from wells within this system is 3.274 mgd (12-MAV), based on reports filed with the Commission; actual use of ground water in this area could be higher. For some wells, the 12-MAV was calculated from pumpage data through only December 2005; more recent quantities could not be calculated. Pumpage could not be calculated and is not known for 11 permits (noted as “N/R” in Exhibit 15) because there are no reports on record.

As noted in the Background section, above, at the July 18, 2001 Commission meeting, staff recommended that the total allocation for the Puuloa Aquifer System Area should not exceed 15 mgd. On this basis, then the quantity available for allocation is only 0.183 mgd. Gentry's water use applications propose to increase water use within the Ewa by Gentry development by 0.407 mgd. Although this increase, if approved, would bring the total permitted water use for the Puuloa system to 15.224 mgd, staff does not believe this would cause the aquifer to be overused nor at risk of becoming degraded for several reasons, including the examples given in the following paragraphs.

First, staff expects that follow-up on the findings of the 20-year review report, which will be provided to the Legislature in January 2009, will involve some combination of revocations or partial revocations for non-use, enforcement of the requirement for permittees to submit annual or monthly reports of their water use and chloride concentrations measured in their well water, or other actions. Staff anticipates re-examining the status of water use permits and water usage for the caprock aquifer to bring the permitted quantities in line with actual use. As noted earlier, available records indicate that actual use is approximately one-fourth the total permitted quantity. Though slightly less than one-half have not reported use, of those that have some have reported either no use or use at a rate that is a fraction of the permitted quantity. For example, the U.S. Navy's average use through December 2007 was 0.238 mgd, which is only 4 percent of the quantity of 5.890 mgd allocated in WUP No. 189 (see Exhibit 2).

Second, as more reclaimed water from the Honouliuli Wastewater Treatment Plant becomes available for irrigation and other non-potable uses in the area, permitted quantities of and demand for ground water should be reduced. As water users in the area shift to reclaimed water as a source of non-potable water, demand for brackish ground water is expected to decline further. HASEKO (Ewa), for example, has entered into an agreement with the BWS to provide up to 0.600 mgd of reclaimed water, which offsets HASEKO's ground water use by that amount. The quantity of water currently allocated for HASEKO's use is 3.3 mgd. The availability of 0.600 mgd of reclaimed water effectively reduces HASEKO's need for ground water to 2.7 mgd. Additionally, HASEKO's reported water use (12-MAV) is only 0.079 mgd, which represents approximately 2 percent of its allocation (see Exhibit 2).

Pump test data show that the caprock aquifer is capable of producing large quantities of brackish water without causing much drawdown of the water table.

Staff believes that the quantity of water is available in the caprock aquifer is sufficient to meet the proposed uses for the following reasons:

- The aquifer is a thin basal aquifer, and the salinity impacts of withdrawals at an individual well site will likely be confined to the immediate vicinity of the pumping well.

- Although the recommended total permitted quantity for the Puuloa Aquifer System Area is 15 mgd (a staff recommendation made at the October 18, 1998 Commission meeting), several factors indicate that there is sufficient brackish water available to permit the quantity requested in Gentry's applications. There factors include:
 - Water use records show that actual water use under existing permits issued for area wells is much lower;
 - It is anticipated that, to follow up on the findings of the 20-year review, staff will identify and recommend to the Commission permits that should be revoked in whole or in part for nonuse; and
 - Some users have already or are shifting to reclaimed water as a source of non-potable water supply, which leads to a corresponding reduction in demand for brackish ground water to meet their needs.
- Based on the hydraulic properties of the caprock aquifer and an assessment of other uses in the vicinity of Ewa by Gentry project, it is unlikely that the proposed withdrawal of up to 0.778 mgd will interfere with other users in the area.

(2) Reasonable-beneficial

Section 174C-3 HRS defines "reasonable-beneficial use" is

"...the use of water in such a quantity as is necessary for economic and efficient utilization, for a purpose, and in a manner which is both reasonable and consistent with the state and county land use plans and the public interest."

I. Purpose of Use

The applicant is requesting approval to use a total of 0.778 mgd of brackish ground water to irrigate landscape plantings along roadways and in community park areas within the Ewa by Gentry development.

II. Quantity Justification

A letter included with each of the applications, provided by Browlie & Lee (see Exhibit 15), a firm that provides landscape and irrigation services for the Ewa by Gentry development, explains the basis for the water use quantities requested in Gentry's applications. According to this letter, for 18 years Brownlie & Lee has dealt with the requirement to provide low maintenance and drought-tolerant plantings within the development. The firm also cites its experience in applying water conservation efforts. Their estimates include a 15 percent inefficiency factor to account for the high percentage of small irregular planting areas among

the residential lots in the subdivision. The small size and density of lots shown on the irrigation master plan (Exhibit 4) and the accompanying inventory of proposed use TMKs listed in Exhibits 5 through 9, illustrate the disaggregated nature of the areas the planned irrigation systems will serve.

In comments submitted by OHA (see Exhibit 16), OHA agrees that potable water should not be used for the proposed purpose. Also, OHA asks whether the landscaping “will use drought-tolerant local or endemic [plant] species common to the area.” The plant materials provided as part of Gentry’s applications (see Exhibit 10) are drought-tolerant plants.

III. Efficiency of Use

Gentry states that spray heads will be used in its irrigation system for all of the use areas proposed in its water use permit applications. The proposed irrigation practice is to apply the amount of water needed to meet the demand. (This is stated as “irrigate to demand” on each of the applications.) Efficiency is also discussed in the preceding section, Quantity Justification.

IV. Analysis of Practical Alternatives

Gentry’s analysis of alternative potable and non-potable sources is summarized below.

1. Municipal Sources – The Board of Water Supply requires the use of non-potable water for irrigation in the Ewa region. The use of brackish water from the caprock aquifer effectively reduces the amount of potable water needed for the development.
2. Wastewater Reuse (Reclaimed Water) – Treated effluent from the Honouliuli Wastewater Treatment Plant is not available in this area.
3. Ditch System – No ditch system water is available for this area.
4. Desalinization – Desalinization is not financially practical.
5. Surface Water – A source of surface water for alternate supply is not available in this area.

The 2000 Legislature amended the Water Code to include a new section, §174C-51.5 HRS that provides the Commission with the authority to require dual line (potable and non-potable) water supply systems in new industrial and commercial developments located in water management areas. The statute (§174C-51.5(3)(b) HRS) requires county boards of water supply, in consultation with the state Department of Health, to adopt standards for non-potable water distributed through dual-line water supply systems and rules regarding the use of non-potable water. The City and County of Honolulu has addressed this requirement through the Ewa Development Plan and various project approvals.

The consistency of this application with other beneficial-reasonable use criteria is discussed in the following sections.

(3) Interference with other existing legal uses

A discussion of other ground water users in the vicinity of the Ewa by Gentry development and within the Puuloa Aquifer System Area is provided above in Section 1, Water Availability.

All of Gentry's applications state that there are no known conflicts with any existing legal uses. Staff does not believe Gentry's proposed use will interfere with other legal water uses in the area.

(4) Public interest

In each of its applications, Gentry explains that the use of brackish water [for the proposed irrigation uses] preserves potable water that would otherwise be used for irrigation. This assessment is consistent with the Ewa Development Plan, which requires non-potable water use in the Ewa region for the purpose of preserving potable water supplies for other uses that require lower levels of chloride and total dissolved solids.

No public comments and no objections were received on any of Gentry's applications.

(5) State and county general plans and land use designations

Based on comments received from the State Land Use Commission (LUC) and from the City and County of Honolulu, Department of Planning and Permitting (DPP), the proposed uses are consistent with state and county general plans and land use designations.

The LUC confirms that the Ewa by Gentry development is located within the State Land Use Urban District. Activities and uses within the Urban District are under the jurisdiction of the City and County of Honolulu, Department of Planning and Permitting (DPP).

In the DPP's comments on Gentry's water use permit applications (Exhibit 17), it states that the proposed use for roadway landscaping irrigation and park irrigation (proposed only in WUPA No. 856 and 857) is consistent with local zoning. The DPP further notes that the proposed use of brackish caprock water is consistent with Section 4.2.1 of the Ewa Development Plan, which requires (when necessary) a dual water system and non-potable water use to conserve potable water in the Ewa region.

Comments from the BWS are included in the comment letter provided by the DPP (Exhibit 17). The BWS requests contingency plans for the new proposed wells, Well Nos. 1901-08, 1900-24, and 2000-06, in the event that chloride levels in these wells exceeds the 1,000 mg/l limit.

(6) County land use plans and policies

The proposed uses are consistent with local land use plans and policies, as discussed under Section 5, above.

(7) Interference with Hawaiian home lands rights

All permits approved by the Commission are subject to the prior rights of Hawaiian home lands, as set forth in the Hawaiian Homes Commission Act (§221 HRS).

Gentry's applications state that the proposed water uses will not interfere with the rights of Hawaiian home lands. The Department of Hawaiian Home Lands (DHHL) and OHA were provided a copy of Gentry's applications for review and comment. In its comments (see Exhibit 15), OHA asks for assurances from the Commission that uses from each of the proposed sources "will not adversely affect constitutionally protected Native Hawaiian uses in the area as protected in the state water code."

Standard conditions 3.g., 6., and 9.f. of all water use permits (see Attachment B) provide notice to all permittees that the Commission's approval is subject to the requirements of the Hawaiian Homes Commission Act, as amended, and cannot interfere with Hawaiian home land rights, in accordance with §174C-101(a) HRS. Given these conditions, it is unlikely that Gentry's proposed water uses will interfere with Hawaiian home land rights, provided it fully complies with these and other permit conditions. The assurance requested by OHA, therefore, can be addressed by monitoring Gentry's performance with respect to the permit conditions and promptly addressing any violations that have the potential to interfere with the rights of Hawaiian home lands.

OTHER

As noted in the Background section, Gentry's water use under two existing permits has exceeded the allocated quantities. These pumpage violations are identified in the report on the 20-year review of the water use permits that will be provided to the Legislature in January 2009.

The results of the 20-year review provide an opportunity to look at the permit process, permit compliance, and information management (maintenance) in a holistic way, rather than addressing issues such as overpumping on a case-by-case basis. For example, a comprehensive review of active caprock permits and pumpage records would aid reassessment and refinement of the quantity of ground water available for allocation. This would help identify permits in which the allocation should be adjusted to reflect actual use, and which permits and how many permits should be revoked in whole or in part.

RECOMMENDATION:

Staff recommends that the Commission approve issuance of five water use permits, as follows:

1. Water use permit no. 855 to Gentry Homes, Ltd., for the reasonable and beneficial use of 66,085 gallons per day of brackish water from the Ewa caprock aquifer (Well No. 1901-08, a proposed new well).
2. Water use permit no. 856 to the Ewa by Gentry Community Association for the reasonable and beneficial use of 194,768 gallons per day of brackish water from the Ewa caprock aquifer (Well No. 2001-05, an existing well). This modifies and supersedes water use permit no. 792.
3. Water use permit no. 857 to Gentry Homes, Ltd., for the reasonable and beneficial use of 224,615 gallons per day of brackish water from the Ewa caprock aquifer (Well No. 2001-12, an existing well). This modifies and supersedes water use permit no. 793.
4. Water use permit no. 858 to Gentry Homes, Ltd., for the reasonable and beneficial use of 36,975 gallons per day of brackish water from the Ewa caprock aquifer (Well No. 1901-05, an existing well). This modifies and supersedes water use permit no. 794.
5. Water use permit no. 859 to Gentry Homes, Ltd., for the reasonable and beneficial use of 255,108 gallons per day of brackish water from the Ewa caprock aquifer (Well Nos. 1900-24 and 2000-06, two proposed new wells).

Approval of these permits should be subject to (1) the standard water use permit conditions listed in Attachment B; (2) the following special conditions, and (3) the conservation conditions Ewa caprock water use permits listed in Attachment C.

1. Should an alternate permanent source of water be found for this use, then the Commission reserves the right to revoke this permit, after a hearing.
2. This permit is approved under the assumption that reclaimed wastewater will become available for reuse as an alternative supply source.
3. Pumping shall cease immediately if chloride measurements show that the brackish water drawn by the well exceeds 1,000 mg/l of chloride, unless a variance from the chloride limit has been granted. The authority to approve variance requests is delegated to the Chairperson.
4. The permittee shall submit a contingency plan for water use in the event the chloride concentration in the permitted well(s) exceeds the 1,000 mg/l sustainable capacity limit established for Ewa caprock aquifer sources, the permittee shall seek an alternative source of supply. The contingency plan shall be submitted to the Commission within 30 days of the issuance of this permit.
5. In the event that the tax map key(s) at the location(s) of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change(s) within thirty (30) days after the permittee receives notice of the change(s).

6. Standard Condition 16 is waived for brackish water wells.

Respectfully submitted,



KEN C. KAWAHARA, P.E.
Deputy Director

Attachment(s): A Water Use Permit Detailed Information
 B Water Use Permit Standard Conditions
 C Conservation Conditions for Ewa Caprock Water Use Permits

Exhibit(s): 1 Location Map
 2 Active Water Use Permits in the Puuloa Aquifer System Area
 3 Ewa by Gentry Well Locations
 4 Ewa by Gentry Irrigation Master Plan
 5 Proposed Irrigation Plan and Use TMKs for WUPA No. 856
 6 Proposed Irrigation Plan and Use TMKs for WUPA No. 857
 7 Proposed Irrigation Plan and Use TMKs for WUPA No. 858
 8 Proposed Irrigation Plan and Use TMKs for WUPA No. 855
 9 Proposed Irrigation Plan and Use TMKs for WUPA No. 859
 10 Proposed Plant Materials and Irrigated Acres
 11 Well No. 2001-05 Pumpage Data, Ewa by Gentry Community Association
 12 Well No. 2001-12 Pumpage Data, Gentry Homes, Ltd.
 13 Well No. 1901-05 Pumpage Data, Gentry Homes, Ltd.
 14 Nearby Wells and Water Uses
 15 Basis for Quantity Estimate Prepared by Brownlie & Lee for Gentry
 16 Comments from Office of Hawaiian Affairs
 17 Comments from C&C Honolulu, Department of Planning and Permitting

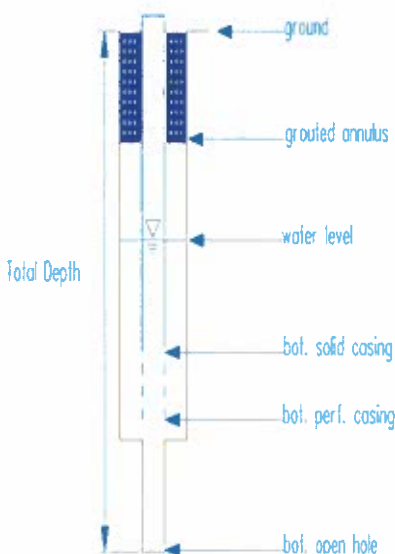
APPROVED FOR SUBMITTAL:



LAURA H. THIELEN
Chairperson

WATER USE PERMIT DETAILED INFORMATION

	Well Number and Name					
	1901-08 Gentry Area 45	2001-05 Soda Creek III	2001-12 Keaunui Area 30	1901-05 Gentry Area 13	1900-24 Gentry Area 35, 1	2000-06 Gentry Area 35, 2
WUPA No.	855	856	857	858	859	859
Quantity currently permitted (gpd)	N/A	66,000	249,000	56,000	N/A	N/A
Quantity requested (gpd)	66,085	194,768	224,615	36,975	255,108	--
Proposed use area (total acres)	10.62	31.3	36.09	5.94	41.00	--
Source Information						
New or existing source	New	Existing	Existing	Existing	New	New
Owner/Operator	Gentry Homes	Ewa by Gentry ¹	Gentry Homes	Gentry Homes	Gentry Homes	Gentry Homes
Location (TMK)	9-1-069:005	9-1-070:132	9-1-102:064	9-1-116:013	9-1-136:064	9-1-136:064
Year drilled	N/A	1994	1999	1999	N/A	N/A
Casing diameter (in.)	Not constructed	11	30	20	Not constructed	Not constructed
Elevation data (datum = mean sea level, 0 ft)						
Water level	--	1.0	--	1.0	--	--
Ground surface	--	31	31	33	--	--
Bottom of solid casing	--	1	2	-2	--	--
Bottom of perforated casing	--	-24	-8	-8	--	--
Bottom of open hole	--	-24	-8	-10	--	--
Total depth (ft)	--	55	39	43	--	--
Grouted annulus depth (ft)	--	27	27	19	--	--
Pump capacity (gpm)	100 (proposed)	200 (proposed) ²	430	355	150 (proposed)	150 (proposed)

Notes:¹ Ewa by Gentry Community Association² The current permitted pump capacity is 110 gpm. Applicant has applied for a new pump installation permit to increase the capacity to 200 gpm.

Use Information

Quantity Requested

WUPA No. 855 (new use, one new well)	66,085 gpd
WUPA No. 856 (modify use, one existing well)	194,768 gpd
WUPA No. 857 (modify use, one existing well)	224,615 gpd
WUPA No. 858 (modify use, one existing well)	36,975 gpd
WUPA No. 859 (new use, two new wells)	<u>255,108 gpd</u>
Total quantity requested	777, 551 gpd

Proposed type of water use: Irrigation (landscaped areas, park)

Place of water use: Multiple TMKs within the Ewa by Gentry development
(proposed use TMKs are shown in Exhibits 5 through 9)

Water Usage (12-MAV) Reported by Gentry (Ewa by Gentry development)¹

Ewa by Gentry Community Association (Well No. 2001-05),	0.066 mgd
Gentry Homes (Well No. 2001-12)	0.249 mgd
Gentry Homes (Well No. 1901-05)	0.056 mgd

Puuloa Aquifer System Area

Current 12-MAV Withdrawal (See Exhibit 2) 3.274 mgd

¹ Also see Exhibit 2 for water usage reported by other well operators within the Puuloa Aquifer System Area.

Nearby Surrounding Wells and Other Registered Ground Water Use

Exhibit 14 lists other permitted and registered wells that are constructed within the Puuloa Aquifer System Area, and Exhibit 15 shows the well locations. A total of 63 wells are known to be in the area. Brackish ground water drawn from the Ewa caprock aquifer in this area is primarily used for a variety of irrigation purposes, as follows:

- Landscape and/or park irrigation (IRRLA, IRRPA) – 19 wells
- Golf course irrigation (IRRGc) – 19 wells
- Agriculture (crops and processing) (AGRCP) – 1 well (U.S. Navy)
- Habitat maintenance (IRRHm) – 1 well (U.S. Fish and Wildlife Service)

Of the remaining wells, two are permitted for industrial use (Well Nos. 1902-03 and -04), one is permitted for domestic use (Well No. 1901-02), ten are recorded as unused, four are maintained as observation (monitor) wells, and six are abandoned.

The total permitted quantity of water from the Puuloa Aquifer System Area is 14.817 mgd (see Exhibit 2), allocated through 25 active water use permits. The reported water use from wells within this system is 3.274 mgd (12-MAV), based on water use reports filed with the Commission; actual existing use of ground water in this area could be higher.

Public Notice

In accordance with §13-171-17, HAR, public notices were published in the *Honolulu Star Bulletin* on October 29, 2008 and November 5, 2008, and a copy of both notices sent to Mayor Hannemann's office. Copies of the completed application were sent to the Honolulu Board of Water Supply, the City and County of Honolulu Department of Planning and Permitting, the state Departments of Health and Department of Hawaiian Home Lands, various divisions of the Department of Land and Natural Resources, the Land Use Commission, and the Office of Hawaiian Affairs. Comments and objections to the proposed permit were to be filed with the Commission by November 20, 2008.

Comments were received from most of the review agencies and are addressed in the analysis of the application and the recommended permit special conditions. No comments were received from the general public or other interest groups.

Objections

The public notice specifies that an objector meet the following requirements: (1) state property or other interest in the matter; (2) set forth questions of procedure, fact, law, or policy, to which objections are taken; (3) state all grounds for objections to the proposed permits, (4) provide a copy of the objection letter(s) to the applicant, and (5) submit objections meeting the previous requirements to the Commission by November 20, 2008.

No objections were filed.

STANDARD WATER USE PERMIT CONDITIONS

1. The water described in this water use permit may only be taken from the location described and used for the reasonable-beneficial use described at the location described above. Reasonable beneficial uses means "the use of water in such a quantity as is necessary for economic and efficient utilization which is both reasonable and consistent with State and County land use plans and the public interest." (HRS § 174C-3)
2. The right to use ground water is a shared use right.
3. The water use must at all times meet the requirements set forth in HRS § 174C-49(a), which means that it:
 - a. Can be accommodated with the available water source;
 - b. Is a reasonable-beneficial use as defined in HRS § 174C-3;
 - c. Will not interfere with any existing legal use of water;
 - d. Is consistent with the public interest;
 - e. Is consistent with State and County general plans and land use designations;
 - f. Is consistent with County land use plans and policies; and
 - g. Will not interfere with the rights of the Department of Hawaiian Home Lands as provided in section 221 of the Hawaiian Homes Commission Act and HRS § 174C-101(a).
4. The ground-water use here must not interfere with surface or other ground-water rights or reservations.
5. The ground-water use here must not interfere with interim or permanent instream flow standards. If it does, then:
 - a. A separate water use permit for surface water must be obtained in the case an area is also designated as a surface water management area;
 - b. The interim or permanent instream flow standard, as applicable, must be amended.
6. The water use authorized here is subject to the requirements of the Hawaiian Homes Commission Act, as amended, if applicable.
7. The water use permit application and submittal, as amended, approved by the Commission at its **December 17, 2008** meeting are incorporated into this permit by reference.
8. Any modification of the permit terms, conditions, or uses may only be made with the express written consent of the Commission.
9. This permit may be modified by the Commission and the amount of water initially granted to the permittee may be reduced if the Commission determines it is necessary to:
 - a. protect the water sources (quantity or quality);
 - b. meet other legal obligations including other correlative rights;
 - c. insure adequate conservation measures;
 - d. require efficiency of water uses;
 - e. reserve water for future uses, provided that all legal existing uses of water as of June, 1987 shall be protected;
 - f. meet legal obligations to the Department of Hawaiian Home Lands, if applicable; or
 - g. carry out such other necessary and proper exercise of the State's and the Commission's police powers under law as may be required.

Prior to any reduction, the Commission shall give notice of its proposed action to the permittee and provide the permittee an opportunity to be heard.

10. An approved flowmeter(s) must be installed to measure monthly withdrawals and a monthly record of withdrawals, salinity, temperature, and pumping times must be kept and reported to the Commission on Water Resource Management on forms provided by the Commission on a monthly basis (attached).
11. This permit shall be subject to the Commission's periodic review for the Puuloa Aquifer System Area's sustainable yield. The amount of water authorized by this permit may be reduced by the Commission if the sustainable yield of the Puuloa Aquifer System Area, or relevant modified aquifer(s), is reduced.
12. A permit may be transferred, in whole or in part, from the permittee to another, if:
 - a. The conditions of use of the permit, including, but not limited to, place, quantity, and purpose of the use, remain the same; and
 - b. The Commission is informed of the transfer within ninety days.Failure to inform the department of the transfer invalidates the transfer and constitutes a ground for revocation of the permit. A transfer, which involves a change in any condition of the permit, including a change in use covered in HRS § 174C-57, is also invalid and constitutes a ground for revocation.
13. The use(s) authorized by law and by this permit do not constitute ownership rights.
14. The permittee shall request modification of the permit as necessary to comply with all applicable laws, rules, and ordinances that will affect the permittee's water use.
15. The permittee understands that under HRS § 174C-58(4), that partial or total nonuse, for reasons other than conservation, of the water allowed by this permit for a period of four (4) continuous years or more may result in a permanent revocation as to the amount of water not in use. The Commission and the permittee may enter into a written agreement that, for reasons satisfactory to the Commission, any period of nonuse may not apply towards the four-year period. Any period of nonuse which is caused by a declaration of water shortage pursuant to section HRS § 174C-62 shall not apply towards the four-year period of forfeiture.
16. The permittee shall prepare and submit a water shortage plan within 30 days of the issuance of this permit as required by HAR § 13-171-42(c). The permittee's water shortage plan shall identify what the permittee is willing to do should the Commission declare a water shortage in the Puuloa Ground Water Management Area.
17. The water use permit shall be subject to the Commission's establishment of instream standards and policies relating to the Stream Protection and Management (SPAM) program, as well as legislative mandates to protect stream resources.
18. The permittee understands that any willful violation of any of the above conditions or any provisions of HRS § 174C or HAR § 13-171 may result in the suspension or revocation of this permit.
19. Special conditions in the attached cover transmittal letter are incorporated herein by reference.

CONSERVATION CONDITIONS EWA CAPROCK WATER USE PERMITS

- 1. The permittee shall adopt self-administered water conservation programs and plans with collective monitoring to protect and maintain the caprock resource. Water conservation programs and plans shall be submitted to the Commission within 60 days from the date of Commission approval.**
- 2. Water conservation programs and plans shall address (as applicable) but not be limited to the following:**
 - a. Reduce the demand for non-potable water by:**
 - Identifying and utilizing water efficient plants and drought tolerant plants for landscaping and quantifying their demands (Xeriscape);
 - Mulching planting areas with organic materials, etc., to minimize evaporation;
 - Efficiently maintaining the plants;
 - Improving land management practices to conserve water.
 - b. Improve efficiency in use and reduce losses and waste of non-potable water by:**
 - Using efficiently designed landscaping and irrigation systems;
 - Monitoring irrigation requirements and controlling usage accordingly;
 - Managing irrigation scheduling to minimize water demand;
 - Eliminating opportunities for water wastage;
 - Maintaining and improving irrigation systems as necessary.
 - c. Industrial users should employ the recirculation of cooling water and the reuse of cooling and process water.**
- 3. The permittee shall pursue and participate in alternative non-potable water source development and use such as wastewater reuse (direct reuse and/or recharge injection).**
- 4. In the event that water conservation programs and plans are not complied with or that a waste of water is occurring, the Commission shall proceed with the necessary actions to revoke this permit.**

Aquifer System Water Use Permit Index *(caprock)*

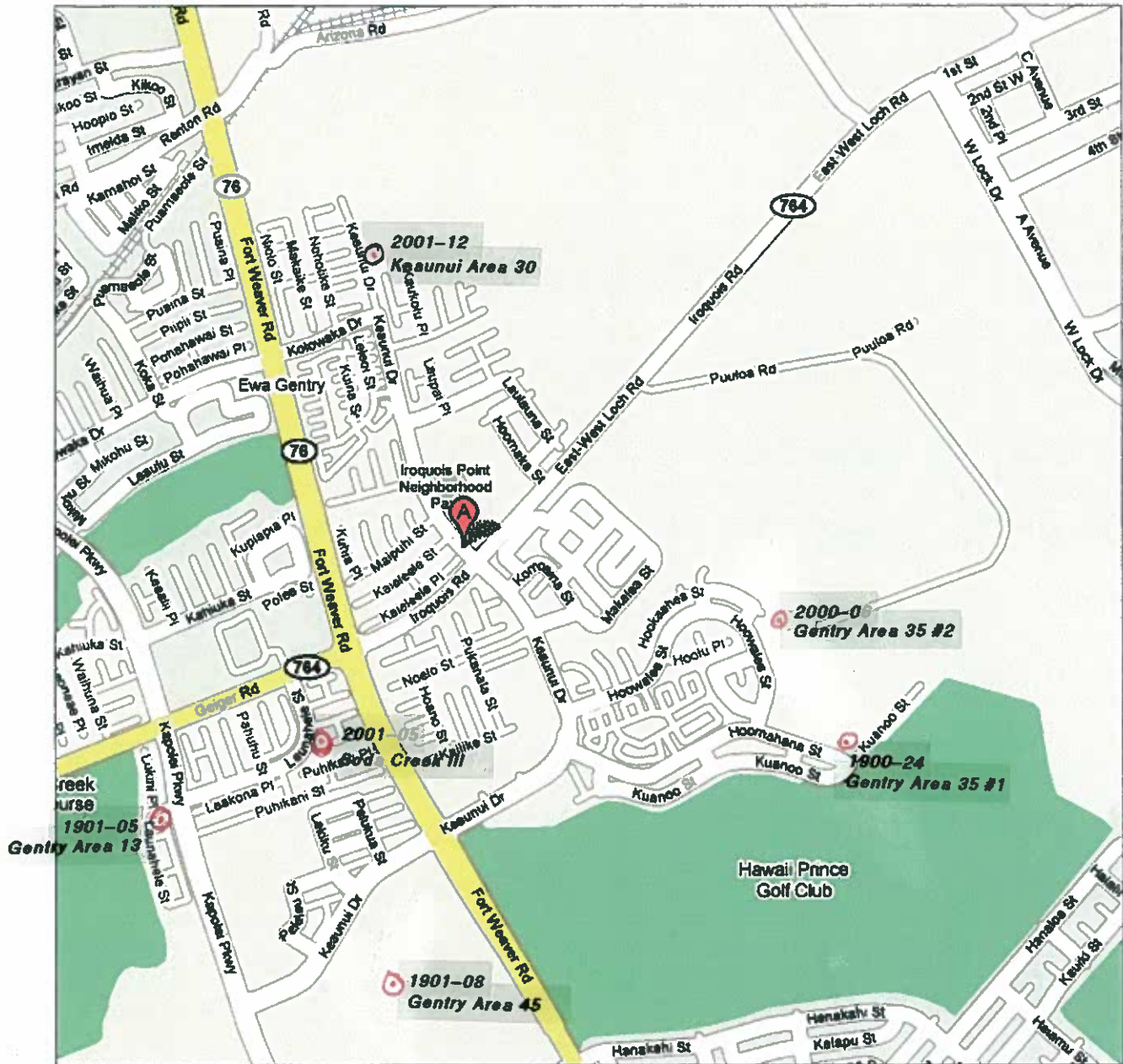
ISLAND OF OAHU

WUP No	Approved	Applicant	Well No.	Well Name	WUP (mgd)	12-MAY (mgd)
WMA Aquifer System: PUULOA				Sustainable Yield =		
060	9/27/1985	GENTRY DEVELOPMENT CORP.	2001-02	EWA GENTRY	0.080	0.046
152	10/19/1988	HAWAII PRINCE GOLF CLUB	1900-02	EP 22	0.900	0.000
152	10/19/1988	HAWAII PRINCE GOLF CLUB	1900-17	WELL 2		0.071
152	10/19/1988	HAWAII PRINCE GOLF CLUB	1900-18	WELL 3		0.038
152	10/19/1988	HAWAII PRINCE GOLF CLUB	1900-19	WELL 4		0.017 (12/05)
152	10/19/1988	HAWAII PRINCE GOLF CLUB	1900-20	WELL 5		0.000 (12/05)
152	10/19/1988	HAWAII PRINCE GOLF CLUB	1901-03	WELL 1		0.012 (12/05)
157	9/13/1989	PALM VILLA I ASSOCIATION	2001-06	PALM VILLA 1	0.080	N/R
160	4/15/1998	C&C DWWM	1902-03	HONOULIULI STP 1	0.500	N/R
160	4/15/1998	C&C DWWM	1902-04	HONOULIULI STP 2		N/R
189	12/16/1992	U.S. NAVY	2001-01	EP 23	5.890	0.238 (12/07)
409	9/25/1998	HASEKO (EWA), INC.		EWA MARINA		-
752	4/18/1990	YHB EWA LLC	1900-22	PUULOA DUG WELL B	0.600	N/R
752	4/18/1990	YHB EWA LLC	1959-08	PUULOA DUG WELL A		N/R
759	10/17/2005	YHB EWA LLC	1900-21	PUULOA GC IRR	0.100	0.000 (12/05)
783	7/12/2006	HAWAII PRINCE GOLF CLUB	1900-02	EP 22	0.301	-
783	7/12/2006	HAWAII PRINCE GOLF CLUB	1900-17	WELL 2		-
783	7/12/2006	HAWAII PRINCE GOLF CLUB	1900-18	WELL 3		-
783	7/12/2006	HAWAII PRINCE GOLF CLUB	1900-19	WELL 4		-
783	7/12/2006	HAWAII PRINCE GOLF CLUB	1900-20	WELL 5		-
783	7/12/2006	HAWAII PRINCE GOLF CLUB	1901-03	WELL 1		-
784	7/12/2006	HASEKO (EWA), INC.	1901-06	EP 27 BATTERY	3.300	N/R -
784	7/12/2006	HASEKO (EWA), INC.	1902-01	EP 27 BATTERY		0.079
784	7/12/2006	HASEKO (EWA), INC.	1902-09	EP 27 BATTERY		N/R -
784	7/12/2006	HASEKO (EWA), INC.	1902-10	EP 27 BATTERY		N/R -
784	7/12/2006	HASEKO (EWA), INC.	1902-11	EP 27 BATTERY		N/R -
785	7/12/2006	C&C DEPT. OF PARKS & REC	2001-03	GEIGER PARK	0.030	N/R
786	7/12/2006	PALM COURT ASSOCIATION	2002-12	PALM COURT 3	0.040	N/R
787	7/12/2006	PALM VILLA II ASSOCIATION	2001-08	PALM VILLA 2	0.048	N/R
788	7/12/2006	ARBORS ASSOCIATION	2001-07	ARBORS	0.063	N/R
789	7/12/2006	U.S. FISH & WILDLIFE	2101-14	HONOULIULI UNIT	0.216	0.215
790	7/12/2006	GENTRY DEVELOPMENT CO.	2001-04	SUNRISE APT.	0.040	0.004
791	7/12/2006	GENTRY DEVELOPMENT CO.	2001-09	FORT WEAVER APT.	0.023	N/R
792	7/12/2006	EWA BY GENTRY COMM ASSOC	2001-05	SODA CREEK III	0.066	0.052
793	7/12/2006	GENTRY HOMES, LTD.	2001-12	KEAUNUI (AREA 30)	0.249	0.247

WUP No	Approved	Applicant	Well No.	Well Name	WUP (mgd)	12-MAV (mgd)
794	7/12/2006	GENTRY HOMES, LTD.	1901-05	GENTRY AREA 13	0.056	0.123
795	7/12/2006	U.S. DOC/NOAA/NWS	1900-23	PACIFIC TSUNAMI	0.023	N/R
796	7/12/2006	CORAL CREEK GOLF, INC.	2002-17	CORAL CREEK NO 2	0.498	1.613 (6/08)
797	7/12/2006	CORAL CREEK GOLF, INC.	2001-13	CORAL CREEK NO 4	0.800	0.384 (6/08)
798	7/12/2006	CORAL CREEK GOLF, INC.	2001-14	CORAL CREEK NO 10	0.892	N/R
798	7/12/2006	CORAL CREEK GOLF, INC.	2002-15	CORAL CREEK NO 1		0.008 (6/08)
798	7/12/2006	CORAL CREEK GOLF, INC.	2002-17	CORAL CREEK NO 2		-
798	7/12/2006	CORAL CREEK GOLF, INC.	2002-19	CORAL CREEK LAKE 1		0.095 (6/08)
799	7/12/2006	AOAO SUNCREST/SHORES/LOM	2001-10	GENTRY AREA 24	0.022	0.032
<i>Summary for 'SYSTEM' = PUULOA (44 detail records)</i>						
Totalling					14.817	3.274 reported
Available						



Address **Keaunui Dr**
Ewa Beach, HI 96706



EWA BY GENTRY

Water Supply Wells for Irrigation Master Plan

WUPA Nos. 855 through 859

Existing wells: 1901-01, 2001-05, 2001-12

New proposed wells: 1900-24, 1901-08, 2000-06

EXHIBIT 3

Ewa by Gentry

Irrigation Master Plan

LEGEND

IRRIGATION MAIN / SIZE

LOW PRESSURE IRRIGATION MAIN / SIZE
(R-1 EFFLUENT)

GATE VALVE LOCATION

EXISTING INDIVIDUAL ASSOCIATION IRRIGATION WELL

PROPOSED BOOSTER PUMP

EXISTING EWA BY GENTRY ASSOCIATION IRRIGATION WELL

PROPOSED EWA BY GENTRY ASSOCIATION IRRIGATION WELL

IRRIGATION CONTROLLER

IRRIGATION CONTROLLER NUMBER

AREA 35 WELL

KEAUNUI WELL

SUN TERRA WELL

AREA 13 WELL

AREA 45 WELL

AREA 28B & C (WOODBIDGE)

AREA 28A & D (CARRIAGES)

AREA 26 (THE LOFTS, ALII COVE, ALII COURT)

4800 GPD / 40 GPM AVG. x 2.0 HOURS

GENTRY ENTRY WELL

ALLOCATION 80,000 GPD / 110 GPM

(PALM VILLAS 1) AREA 1A WELL

ALLOCATION 80,000 GPD / 100 GPM

AREA 1B (PALM COURT 1)

AREA 2A (SODA CREEK 1)

AREA 2B (SODA CREEK 2)

AREA 1C (PALM COURT 2&3) WELL

ALLOCATION 66,000 GPD / 105 GPM

AREA 3 (ARBORS) WELL

ALLOCATION 63,000 GPD / 100 GPM

AREA 4 (PALM VILLAS 2) WELL

ALLOCATION 48,000 GPD / 120 GPM

AREA 5 (PALM VILLAS)

AREA 5F (PRESCOTT ON THE GREEN)

AREA 6 (SUN TERRA ON THE PARK)

KAPOLEI PARKWAY / GEIGER ROAD, CONTROLLERS #30-33

35,708 GPD / 110 GPM MAX. / 89.72 GPM AVG. x 6.63 HOURS

AREA 8 (CORONADO)

AREA 8A (CORONADO) WELL

ALLOCATION 23,400 GPD / 110 GPM

SUN TERRA TOT LOT

WELL SERVICE AREA

GEIGER PARK (AREA 11)

AREA 7 (SUN TERRA SOUTH, FIESTA & DEL VERDE)

AREA 13 WELL

DEMAND = 36,975 GPD

PUMP = 240 GPM AT 65 PSI / 10.5 HOURS PER DAY

HONOLULU PUMPING STATION

GEIGER ROAD CONTROLLER #28

6,750 GPD / 94 GPM MAX.

64.29 GPM AVG. x 1.75 HOURS

AREA 16 (FUTURE INDUSTRIAL)

AREA 16A (FUTURE INDUSTRIAL/COMMERCIAL)

AREA 13 (HUELANI) CONTROLLERS #23-26

23,707 GPD / 100 GPM MAX. / 54.5 GPM AVG. x 7.25 HOURS

AREA 17 (FUTURE S.F.)

AREA 16 / 17 ACCESS ROAD

AREA 14 (FUTURE M.F.)

44,800 GPD / 100 GPM MAX. / 65 GPM AVG. x 11.5 HOURS

AREA 17A (FUTURE S.F.)

AREA 47 (FUTURE SCHOOL)

AREA 49 (FUTURE OPEN SPACE)

86,750 GPD / 100 GPM MAX. / 65 GPM AVG. x 22.25 HOURS

KAPOLEI PARKWAY EXTENSION CONTROLLER #21

14,618 GPD / 100 GPD MAX. / 57 GPD AVG. x 4.25 HOURS

AREA 32 (FUTURE CHURCH SITE)

EWA BY GENTRY FUTURE ENTRY LOT

2925 GPD / 65 GPM AVG. x 0.75 HOURS

AREA 31 FT. WEAVER FRONTAGE (FUTURE)

2,700 GPD / 90 GPM MAX. / 60 GPM AVG. x 75 HOURS

AREA 28B & C (WOODBIDGE)

AREA 28A & D (CARRIAGES)

AREA 26 (THE LOFTS, ALII COVE, ALII COURT)

4800 GPD / 40 GPM AVG. x 2.0 HOURS

GENTRY ENTRY WELL

ALLOCATION 80,000 GPD / 110 GPM

(PALM VILLAS 1) AREA 1A WELL

ALLOCATION 80,000 GPD / 100 GPM

AREA 1B (PALM COURT 1)

AREA 2A (SODA CREEK 1)

AREA 2B (SODA CREEK 2)

AREA 1C (PALM COURT 2&3) WELL

ALLOCATION 66,000 GPD / 105 GPM

AREA 3 (ARBORS) WELL

ALLOCATION 63,000 GPD / 100 GPM

AREA 4 (PALM VILLAS 2) WELL

ALLOCATION 48,000 GPD / 120 GPM

AREA 5 (PALM VILLAS)

AREA 5F (PRESCOTT ON THE GREEN)

AREA 6 (SUN TERRA ON THE PARK)

KAPOLEI PARKWAY / GEIGER ROAD, CONTROLLERS #30-33

35,708 GPD / 110 GPM MAX. / 89.72 GPM AVG. x 6.63 HOURS

AREA 8 (CORONADO)

AREA 8A (CORONADO) WELL

ALLOCATION 23,400 GPD / 110 GPM

SUN TERRA TOT LOT

WELL SERVICE AREA

GEIGER PARK (AREA 11)

AREA 7 (SUN TERRA SOUTH, FIESTA & DEL VERDE)

AREA 13 WELL

DEMAND = 36,975 GPD

PUMP = 240 GPM AT 65 PSI / 10.5 HOURS PER DAY

HONOLULU PUMPING STATION

GEIGER ROAD CONTROLLER #28

6,750 GPD / 94 GPM MAX.

64.29 GPM AVG. x 1.75 HOURS

AREA 16 (FUTURE INDUSTRIAL)

AREA 16A (FUTURE INDUSTRIAL/COMMERCIAL)

AREA 13 (HUELANI) CONTROLLERS #23-26

23,707 GPD / 100 GPM MAX. / 54.5 GPM AVG. x 7.25 HOURS

AREA 17 (FUTURE S.F.)

AREA 16 / 17 ACCESS ROAD

AREA 14 (FUTURE M.F.)

44,800 GPD / 100 GPM MAX. / 65 GPM AVG. x 11.5 HOURS

AREA 17A (FUTURE S.F.)

AREA 47 (FUTURE SCHOOL)

AREA 49 (FUTURE OPEN SPACE)

86,750 GPD / 100 GPM MAX. / 65 GPM AVG. x 22.25 HOURS

KAPOLEI PARKWAY EXTENSION CONTROLLER #21

14,618 GPD / 100 GPD MAX. / 57 GPD AVG. x 4.25 HOURS

AREA 32 (FUTURE CHURCH SITE)

EWA BY GENTRY FUTURE ENTRY LOT

2925 GPD / 65 GPM AVG. x 0.75 HOURS

AREA 31 FT. WEAVER FRONTAGE (FUTURE)

2,700 GPD / 90 GPM MAX. / 60 GPM AVG. x 75 HOURS

AREA 28B & C (WOODBIDGE)

AREA 28A & D (CARRIAGES)

AREA 26 (THE LOFTS, ALII COVE, ALII COURT)

4800 GPD / 40 GPM AVG. x 2.0 HOURS

GENTRY ENTRY WELL

ALLOCATION 80,000 GPD / 110 GPM

(PALM VILLAS 1) AREA 1A WELL

ALLOCATION 80,000 GPD / 100 GPM

AREA 1B (PALM COURT 1)

AREA 2A (SODA CREEK 1)

AREA 2B (SODA CREEK 2)

AREA 1C (PALM COURT 2&3) WELL

ALLOCATION 66,000 GPD / 105 GPM

AREA 3 (ARBORS) WELL

ALLOCATION 63,000 GPD / 100 GPM

AREA 4 (PALM VILLAS 2) WELL

ALLOCATION 48,000 GPD / 120 GPM

AREA 5 (PALM VILLAS)

AREA 5F (PRESCOTT ON THE GREEN)

AREA 6 (SUN TERRA ON THE PARK)

KAPOLEI PARKWAY / GEIGER ROAD, CONTROLLERS #30-33

35,708 GPD / 110 GPM MAX. / 89.72 GPM AVG. x 6.63 HOURS

AREA 8 (CORONADO)

AREA 8A (CORONADO) WELL

ALLOCATION 23,400 GPD / 110 GPM

SUN TERRA TOT LOT

WELL SERVICE AREA

GEIGER PARK (AREA 11)

AREA 7 (SUN TERRA SOUTH, FIESTA & DEL VERDE)

AREA 13 WELL

DEMAND = 36,975 GPD

PUMP = 240 GPM AT 65 PSI / 10.5 HOURS PER DAY

HONOLULU PUMPING STATION

GEIGER ROAD CONTROLLER #28

6,750 GPD / 94 GPM MAX.

64.29 GPM AVG. x 1.75 HOURS

AREA 16 (FUTURE INDUSTRIAL)

AREA 16A (FUTURE INDUSTRIAL/COMMERCIAL)

AREA 13 (HUELANI) CONTROLLERS #23-26

23,707 GPD / 100 GPM MAX. / 54.5 GPM AVG. x 7.25 HOURS

AREA 17 (FUTURE S.F.)

AREA 16 / 17 ACCESS ROAD

AREA 14 (FUTURE M.F.)

44,800 GPD / 100 GPM MAX. / 65 GPM AVG. x 11.5 HOURS

AREA 17A (FUTURE S.F.)

AREA 47 (FUTURE SCHOOL)

AREA 49 (FUTURE OPEN SPACE)

86,750 GPD / 100 GPM MAX. / 65 GPM AVG. x 22.25 HOURS

KAPOLEI PARKWAY EXTENSION CONTROLLER #21

14,618 GPD / 100 GPD MAX. / 57 GPD AVG. x 4.25 HOURS

AREA 32 (FUTURE CHURCH SITE)

EWA BY GENTRY FUTURE ENTRY LOT

2925 GPD / 65 GPM AVG. x 0.75 HOURS

AREA 31 FT. WEAVER FRONTAGE (FUTURE)

2,700 GPD / 90 GPM MAX. / 60 GPM AVG. x 75 HOURS

AREA 28B & C (WOODBIDGE)

AREA 28A & D (CARRIAGES)

AREA 26 (THE LOFTS, ALII COVE, ALII COURT)

4800 GPD / 40 GPM AVG. x 2.0 HOURS

GENTRY ENTRY WELL

ALLOCATION 80,000 GPD / 110 GPM

(PALM VILLAS 1) AREA 1A WELL

ALLOCATION 80,000 GPD / 100 GPM

AREA 1B (PALM COURT 1)

AREA 2A (SODA CREEK 1)

AREA 2B (SODA CREEK 2)

AREA 1C (PALM COURT 2&3) WELL

ALLOCATION 66,000 GPD / 105 GPM

AREA 3 (ARBORS) WELL

ALLOCATION 63,000 GPD / 100 GPM

AREA 4 (PALM VILLAS 2) WELL

ALLOCATION 48,000 GPD / 120 GPM

AREA 5 (PALM VILLAS)

AREA 5F (PRESCOTT ON THE GREEN)

AREA 6 (SUN TERRA ON THE PARK)

KAPOLEI PARKWAY / GEIGER ROAD, CONTROLLERS #30-33

35,708 GPD / 110 GPM MAX. / 89.72 GPM AVG. x 6.63 HOURS

AREA 8 (CORONADO)

AREA 8A (CORONADO) WELL

ALLOCATION 23,400 GPD / 110 GPM

SUN TERRA TOT LOT

WELL SERVICE AREA

GEIGER PARK (AREA 11)

AREA 7 (SUN TERRA SOUTH, FIESTA & DEL VERDE)

AREA 13 WELL

DEMAND = 36,975 GPD

PUMP = 240 GPM AT 65 PSI / 10.5 HOURS PER DAY

HONOLULU PUMPING STATION

GEIGER ROAD CONTROLLER #28

6,750 GPD / 94 GPM MAX.

64.29 GPM AVG. x 1.75 HOURS

AREA 16 (FUTURE INDUSTRIAL)

AREA 16A (FUTURE INDUSTRIAL/COMMERCIAL)

AREA 13 (HUELANI) CONTROLLERS #23-26

23,707 GPD / 100 GPM MAX. / 54.5 GPM AVG. x 7.25 HOURS

AREA 17 (FUTURE S.F.)

AREA 16 / 17 ACCESS ROAD

AREA 14 (FUTURE M.F.)

44,800 GPD / 100 GPM MAX. / 65 GPM AVG. x 11.5 HOURS

AREA 17A (FUTURE S.F.)

AREA 47 (FUTURE SCHOOL)

AREA 49 (FUTURE OPEN SPACE)

86,750 GPD / 100 GPM MAX. / 65 GPM AVG. x 22.25 HOURS

KAPOLEI PARKWAY EXTENSION CONTROLLER #21

14,618 GPD / 100 GPD MAX. / 57 GPD AVG. x 4.25 HOURS

AREA 32 (FUTURE CHURCH SITE)

EWA BY GENTRY FUTURE ENTRY LOT

2925 GPD / 65 GPM AVG. x 0.75 HOURS

AREA 31 FT. WEAVER FRONTAGE (FUTURE)

Table 1: LAND USE CONSISTENCY / EFFICIENCY - Soda Creek III Well

LAND USE CONSISTENCY																			
1	2	3	4	5	6	7	8	9	10										
Purpose/Water Use Category	Development Designation	State Land Use District	CDUP Req'd Y(date app) NA (not acquired)	County Zoning Code	SMAP Y(date app) NA (not acquired)	Quantity of Use (GPD)	Sub-Metered (Y/N)	Units or Net Acreage	Applicant's Justification for Quantity of Requested Use for Item 7.										
USES THAT DO NOT REQUIRE POTABLE WATER																			
Roadway/Park Irr - IRRLA & PA	Sun Terra	Urban	NA	R-5	NA		N		All irrigation use is based on actual use for Ewa by Gentry, see attached Brownlie and Lee letter dated July 2, 2008 for application rate. For overall Irrigation area locations see attached Ewa By Gentry Irrigation Master Plan, dated 4-22-08										
Roadway Irrigation - IRRLA		Urban	NA	R-5	NA		N												
Roadway Irrigation - IRRLA		Urban	NA	A-1	NA		N												
Roadway Irrigation - IRRLA		Urban	NA	R-5	NA		N												
Roadway Irrigation - IRRLA		Urban	NA	R-5	NA		N												
Roadway Irrigation - IRRLA		Urban	NA	R-5	NA		N												
Roadway Irrigation - IRRLA		Urban	NA	R-5	NA		N												
Roadway Irrigation - IRRLA		Urban	NA	R-5	NA		N												
Roadway Irrigation - IRRLA		Urban	NA	R-5	NA		N												
Roadway Irrigation - IRRLA		Urban	NA	R-5	NA		N												
Roadway Irrigation - IRRLA		Urban	NA	R-5	NA		N												
Roadway Irrigation - IRRLA		Urban	NA	R-5	NA		N												
Roadway Irrigation - IRRLA		Urban	NA	R-5	NA		N												
Roadway Irrigation - IRRLA		Urban	NA	R-5	NA		N												
Roadway Irrigation - IRRLA		Urban	NA	R-5	NA		N												
Roadway Irrigation - IRRLA		Urban	NA	R-5	NA		N												
Roadway Irrigation - IRRLA		Urban	NA	R-5	NA		N												
TOTAL USE REQUESTED (the sum of total potable use and non-potable use in the table above) =									31.3										

Table 1: LAND USE CONSISTENCY / EFFICIENCY - Gentry Keaunui Well

LAND USE CONSISTENCY									
1	2	3	4	5	6	7	8	9	10
Purpose/Water Use Category	Development Designation	State Land Use District	CDUP Req'd Y(date app) NA (not aquired)	County Zoning Code	SMAP Y(date app) NA (not aquired)	Quantity of Use (GPD)	Sub-Metered (Y/N)	Units or Net Acreage	Applicant's Justification for Quantity of Requested Use for Item 7.
USES THAT DO NOT REQUIRE POTABLE WATER									
Road Irrigation - IRRLA	Area 26 frontage	9-1-102 (Keaunui ROW)	Urban	NA	R-5	NA	N		All irrigation use is based on actual use for Ewa by Gentry, see attached Brownlie and Lee letter dated July 2, 2008 for application rate. For overall irrigation area locations see attached Ewa By Gentry Irrigation Master Plan, dated 4-22-08
Road Irrigation - IRRLA	Area 28 frontage	9-1-107:052 (buffer strip lot)	Urban	NA	R-5	NA	N		
		9-1-107:001 (por)	Urban	NA	R-5	NA	N		
		9-1-107:094 (por)	Urban	NA	R-5	NA	N		
		9-1-107:025(por)	Urban	NA	R-5	NA	N		
		9-1-107:026(por)	Urban	NA	R-5	NA	N		
		9-1-108:063	Urban	NA	R-5	NA	N		
		9-1-106:121	Urban	NA	R-5	NA	N		
		9-1-106:122	Urban	NA	R-5	NA	N		
		9-1-108:157	Urban	NA	R-5	NA	N		
		9-1-108:156	Urban	NA	R-5	NA	N		
		9-1-108:064	Urban	NA	A-1	NA	N		
Park Irrigation - IRRPA	Area 29 park	9-1-102:031	Urban	NA	P-2	NA	N		
Road Irrigation - IRRLA	Area 18 frontage	9-1-86:107 ✓ 9-1-87:178 ✓	Urban Urban	NA NA	R-5 R-5	NA NA	N N		
Road Irrigation - IRRLA	Area 22	9-1-102:28	Urban	NA	P-2	NA	N		
Road Irrigation - IRRLA	Keaunui Dr. ext	9-1-102:32	Urban	NA	R-5	NA	N		
Road Irrigation - IRRLA	Area 30 Area 31 & 32	9-1-102:10 9-1-10:120	Urban Urban	NA NA	A-1 A-1	NA NA	N N		
TOTAL USE REQUESTED (the sum of total potable use and non-potable use in the table above) =						224,615		36.09	

Table 1: LAND USE CONSISTENCY / EFFICIENCY - Gentry Area 13

LAND USE CONSISTENCY									
1	2	3	4	5	6	7	8	9	10
Purpose/Water Use Category	Development Designation	State Land Use District	CDUP Req'd Y(date app) NA (not required)	County Zoning Code	SMAP Y(date app) NA (not required)	Quantity of Use (GPD)	Sub-Metered (Y/N)	Units or Net Acreage	Applicant's Justification for Quantity of Requested Use for Item 7.
USES THAT DO NOT REQUIRE POTABLE WATER									
Road Irrigation - IRRLA	Area 13 Huelani	Urban	NA	A-1	NA		N		All irrigation use is based on actual use for Ewa by Gentry, see attached Brownlie and Lee letter dated July 2, 2008 for application rate. For overall irrigation area locations see attached Ewa By Gentry Irrigation Master Plan, dated 4-22-08
Road Irrigation - IRRLA		Urban	NA	A-1	NA		N		
Road Irrigation - IRRLA		Urban	NA	A-1	NA		N		
Road Irrigation - IRRLA		Urban	NA	A-1	NA		N		
Road Irrigation - IRRLA		Urban	NA	A-1	NA		N		
Road Irrigation - IRRLA		Urban	NA	A-1	NA		N		
Road Irrigation - IRRLA		Urban	NA	A-1	NA		N		
Road Irrigation - IRRLA		Urban	NA	A-1	NA		N		
Road Irrigation - IRRLA		Urban	NA	A-1	NA		N		
Road Irrigation - IRRLA		Urban	NA	A-1	NA		N		
Road Irrigation - IRRLA		Urban	NA	A-1	NA		N		
Road Irrigation - IRRLA		Urban	NA	A-1	NA		N		
Road Irrigation - IRRLA		Urban	NA	A-1	NA		N		
Road Irrigation - IRRLA		Urban	NA	A-1	NA		N		
Road Irrigation - IRRLA		Urban	NA	A-1	NA		N		
TOTAL USE REQUESTED (the sum of total potable use and non-potable use in the table above) =						36,975		5.94	

Table 1: LAND USE CONSISTENCY / EFFICIENCY - Area 45 Well

LAND USE CONSISTENCY									
1	2	3	4	5	6	7	8	9	10
Purpose/Water Use Category	Development Designation	USE TMK	State Land Use District	CDUP Req'd Y (date app) NA (not required)	County Zoning Code	SMAP Y (date app) NA (not required)	Quantity of Use (GPD)	Sub-Metered (Y/N)	Units or Net Acreage
USES THAT DO NOT REQUIRE POTABLE WATER									
Roadway Irrigation - (RRLA)	Area 41, 45/46, 48, 40, & Keaunui west, Kapolei Parkway @ Area 14	9-1-89 portion 005	Urban	NA		NA		N	
Roadway Irrigation - (RRLA)		9-1-89-005, per *	Urban	NA		NA		N	
TOTAL USE REQUESTED (the sum of total potable use and non-potable use in the table above) =							68,085		10.82

* Corrected per phone conversation w/ Greg Fukumitsu (TNWRE)
on 10/14/08

Table 2: IRRIGATION INFORMATION

A		B	C	D	E	F	G	H
Development Designation		Plant Materials	Total acreage	Net Irrigated Area	Begin Growth Period	End Growth Period	Irrigation System	Irrigated Practice
Area 35 Well WUPA No. 851		Ice Plant	NA	5.71	NA	NA	Spray heads	Irrigate to Demand
		Wedelia & Shrubs *	NA	9.01	NA	NA	Spray heads	Irrigate to Demand
		Bermuda Grass	NA	1.09	NA	NA	Spray heads	Irrigate to Demand
		Seashore Paspalum	NA	0.45	NA	NA	Spray heads	Irrigate to Demand
		Zoysia 'El Toro'	NA	24.73	NA	NA	Spray heads	Irrigate to Demand
Area 45 Well WUPA No. 855				41.00				
		Wedelia & Shrubs *	NA	2.24	NA	NA	Spray heads	Irrigate to Demand
		Pohinahina & Shrubs *	NA	0.69	NA	NA	Spray heads	Irrigate to Demand
		Akulikuli & Scrubs *	NA	0.41	NA	NA	Spray heads	Irrigate to Demand
		Zoysia 'El Toro'	NA	7.29	NA	NA	Spray heads	Irrigate to Demand
Area 13 Well WUPA No. 851				10.62				
		Pink Asystasia & Shrubs *	NA	1.04	NA	NA	Spray heads	Irrigate to Demand
		Pohinahina & Shrubs *	NA	0.71	NA	NA	Spray heads	Irrigate to Demand
		Seashore Paspalum	NA	2.17	NA	NA	Spray heads	Irrigate to Demand
		Zoysia 'El Toro'	NA	2.02	NA	NA	Spray heads	Irrigate to Demand
Keaunui Well WUPA No. 853				5.94				
		Pink Asystasia & Shrubs *	NA	0.05	NA	NA	Spray heads	Irrigate to Demand
		Wedelia & Shrubs *	NA	5.91	NA	NA	Spray heads	Irrigate to Demand
		Lau'e & Monstera	NA	0.09	NA	NA	Spray heads	Irrigate to Demand
		Bermuda Grass	NA	21.49	NA	NA	Spray heads	Irrigate to Demand
Sun Terra Tot Lot WUPA No. 851		Seashore Paspalum	NA	3.91	NA	NA	Spray heads	Irrigate to Demand
		Zoysia 'El Toro'	NA	4.63	NA	NA	Spray heads	Irrigate to Demand
				36.10				
		Pink Asystasia & Shrubs *	NA	2.40	NA	NA	Spray heads	Irrigate to Demand
		Ice Plant	NA	13.94	NA	NA	Spray heads	Irrigate to Demand
		Wedelia & Shrubs *	NA	3.26	NA	NA	Spray heads	Irrigate to Demand
		Bermuda Grass	NA	5.82	NA	NA	Spray heads	Irrigate to Demand
		Zoysia 'El Toro'	NA	5.88	NA	NA	Spray heads	Irrigate to Demand
				31.30				

* Asterisk denotes use of the following shrubs (drought/salt-tolerant) used but not listed

Hibiscus

Croton

Spider Lily

Eldorado

Eranthemum

Dwarf Date Palm

Natal Palm

Compute 12-Month
Moving Average

Well ID: 3-2001-005 Well Name: Soda Creek III WUP MGD: 0.066 Beginning: 1/1/2007 Ending: 12/31/2008

12 Month Moving Average

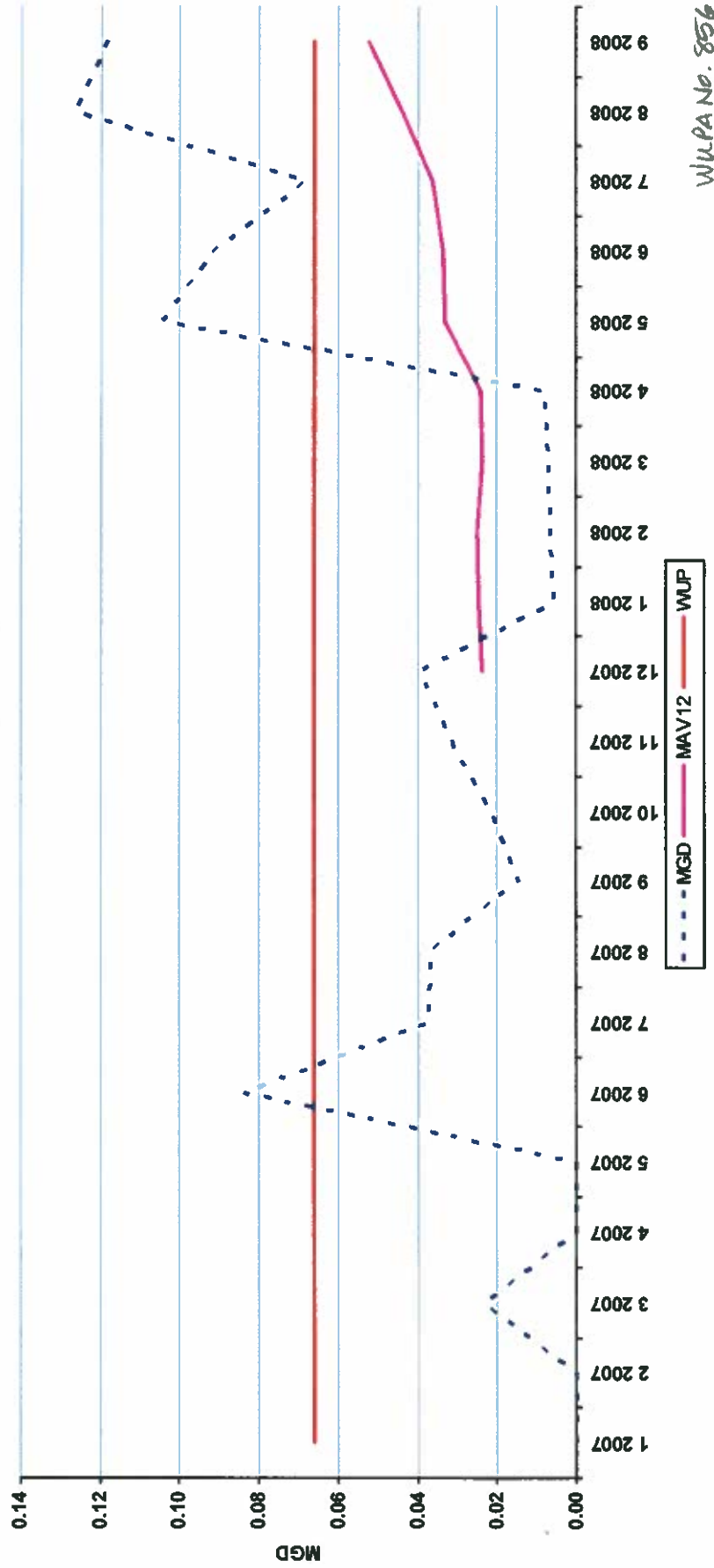


EXHIBIT 11

Well ID:

3-2001-012

Well Name

Kaunui Area 30

WUP MGD:

0.249

Beginning:

1/1/2007

Ending:

12/31/2008

Compute 12-Month Moving Average

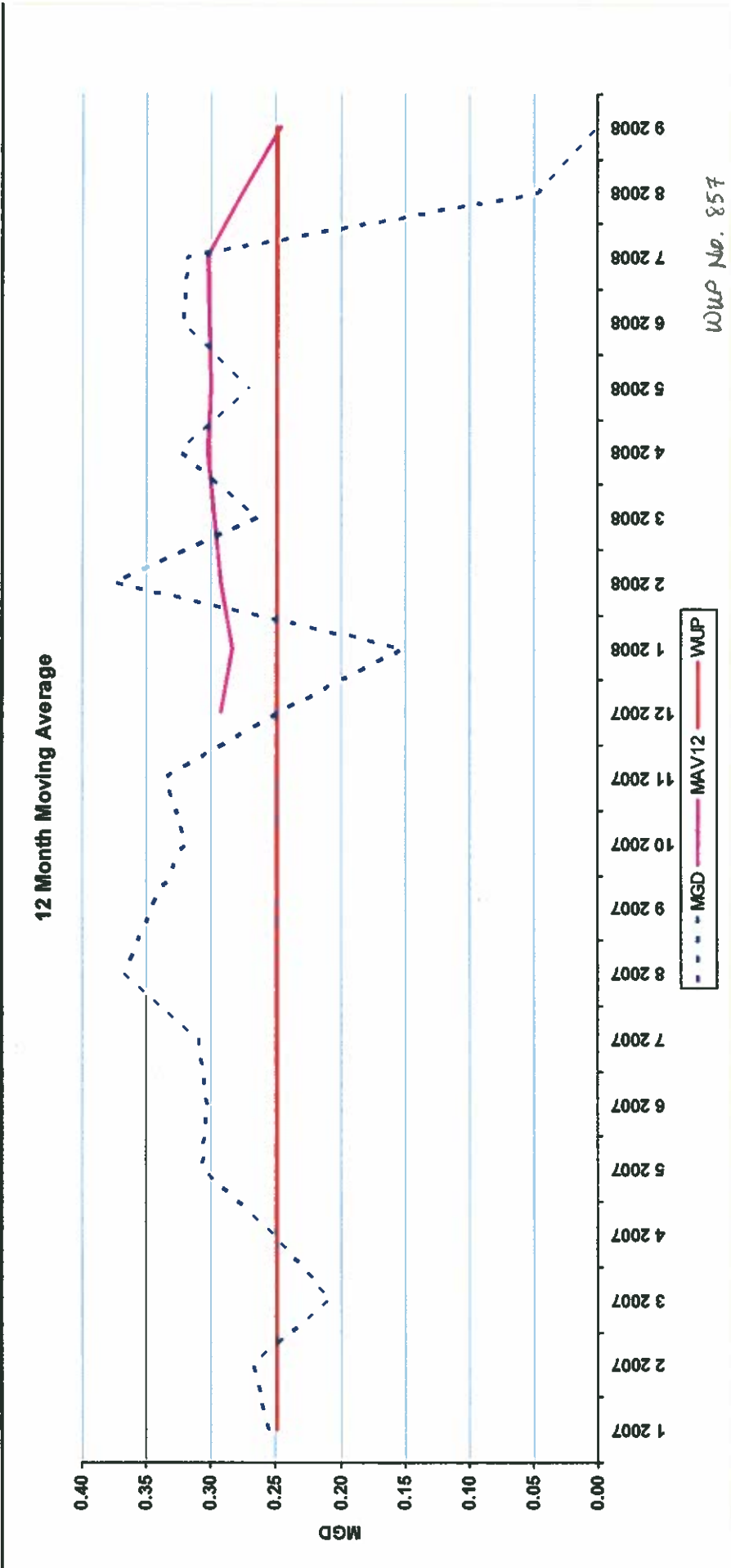


EXHIBIT 12

Well ID: **3-1901-005** Well Name: **Gentry Area 13** WUP MGD: **0.056** Beginning: **1/1/2007** Ending: **12/31/2008**

Compute 12-Month Moving Average

12 Month Moving Average

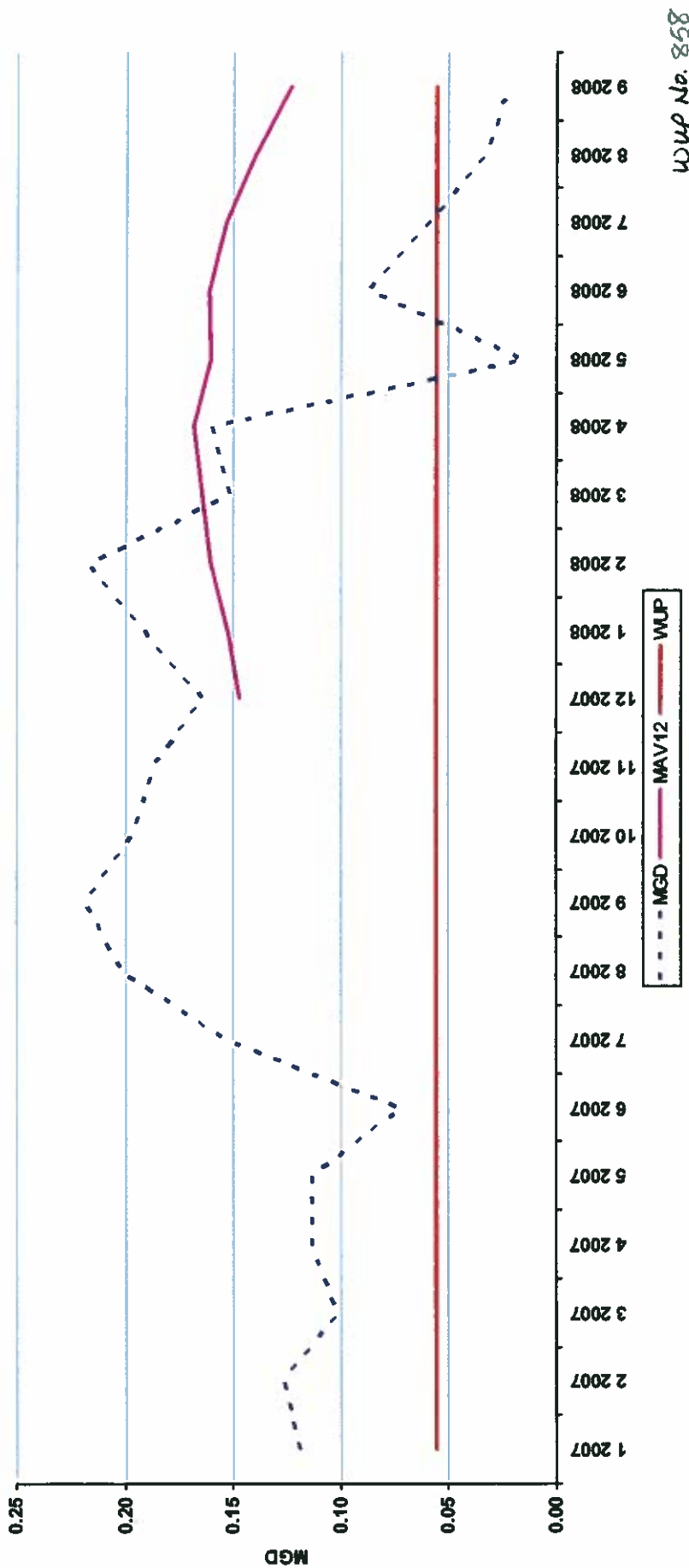


EXHIBIT 13

**Gentry Homes WUPA Nos. 855, 857, 858, 859
Ewa by Gentry WUPA No. 856**

**Puuloa Aquifer System / Ewa Caprock Aquifer
Wells, Well Status, and Water Uses**

WELL_NO	WELL_NAME	OWNER_USER	INIT_CL	PUMP_MGD	USE
1900-01	EP 20	Hawaii Prince Golf Club		2.016	UNU
1900-02	EP 22	Hawaii Prince Golf Club		2.534	IRRGC
1900-03	Barbers Point	U S Navy	1,000		ABNLOS
1900-04	Barbers Point	U S Navy	905		ABNLOS
1900-05	Barbers Point	U S Navy	1,050		ABNLOS
1900-06	Barbers Point	U S Navy	1,100		ABNLOS
1900-07	Barbers Point	U S Navy			UNU
1900-08	Barbers Point	U S Navy	1,080		UNU
1900-09	Barbers Point	U S Navy	1,050		UNU
1900-10	Barbers Point	U S Navy	1,020		ABNLOS
1900-11	Barbers Point	U S Navy	1,070		UNU
1900-12	Ewa Beach	USGS	1,120		UNU
1900-13	EP 30	U S Navy	653	1.598	UNU
1900-14	Ewa Beach C	NOAA			OBS
1900-15	Ewa Beach D	NOAA			OBS
1900-16	New Ewa Intl G C	Sogo Haw Inc			IRRGC
1900-17	Haw Prince Irr 2	Hawaii Prince Golf Club		0.432	IRRGC
1900-18	Haw Prince Irr 3	Hawaii Prince Golf Club		0.302	IRRGC
1900-19	Haw Prince Irr 4	Hawaii Prince Golf Club		0.302	IRRGC
1900-20	Haw Prince Irr 5	Hawaii Prince Golf Club		0.302	IRRGC
1900-21	New Ewa Intl G C	Hon Kosaido		0.259	IRRGC
1900-22	Dug C	Sogo Haw Inc			IRRGC
1900-23	Pac Tsunami Cntr	Nat Weather Service			IRRLA
1901-01	EP 24	Hawaii Prince Golf Club		2.016	UNU
1901-02	Ewa Beach	Podmore & Sons			DOM
1901-03	Haw Prince Irr 1	Hawaii Prince Golf Club		0.417	IRRGC
1901-05	Gentry Area 13	Gentry Companies		0.511	IRRLA
1901-06	Ocean Pointe 4	Haseko Hawaii Inc.	930	.288	IRRGC
1902-01	EP 27A&B, 28&29	Haseko Hawaii Inc	570	10.556	IRRGC
1902-03	Honouliuli STP 1	C&C Envir Serv	300	0.504	INDOTH
1902-04	Honouliuli STP 2	C&C Envir Serv		0.504	INDOTH
1902-05	Coral Creek 5	Coral Creek			OBS
1902-06	Holes 12,13,14	Coral Creek	1,410		IRRLA
1902-07	Holes 15, 16 Mau	Coral Creek	1,320		IRRLA
1902-08	Holes 15, 16 Mak	Coral Creek	1,385		IRRLA
1902-09	Ocean Pointe 1	Haseko Hawaii Inc.	925	0.288	IRRGC
1902-10	Ocean Pointe 2	Haseko Hawaii Inc.	890	0.288	IRRGC
1902-11	Ocean Pointe 3	Haseko Hawaii Inc.	880	0.288	IRRGC
1959-08	Dug D	Sogo Haw Inc			IRRGC
2000-01	EP 21	Campbell Estate	825	2.368	ABNSLD
2001-01	EP 23	U S Navy		3.168	AGRCP
2001-02	Gentry Entry Irr	Ewa Gentry Comm Assn		0.158	IRRLA
2001-03	Geiger Park	C&C Parks&Rec		0.115	IRRPCA

EXHIBIT 14

**Gentry Homes WUPA Nos. 855, 857, 858, 859
Ewa by Gentry WUPA No. 856**

**Puuloa Aquifer System / Ewa Caprock Aquifer
Wells, Well Status, and Water Uses**

WELL_NO	WELL_NAME	OWNER_USER	INIT_CL	PUMP_MGD	USE
2001-04	Sunrise	Gentry Companies		0.158	IRRLA
2001-05	Soda Creek III	Ewa by Gentry Comm Assn		0.158	IRRLA
2001-06	Palm Villa I	Palm Vilal 1 Association		0.144	IRRLA
2001-07	Arbors GV 1	Arbors Assoc	690	0.144	IRRLA
2001-08	Palm Villa 2	Palm Vil 2 Ass	690	0.172	IRRLA
2001-09	Coronado	Gentry Companies		0.158	IRRLA
2001-10	Gentry Area 24	Gentry Companies	620	0.144	IRRLA
2001-12	Keaunui Area 30	Gentry Companies		0.619	IRRG
2001-13	Coral Creek 4	Coral Creek Golf Inc		1.44	IRRLA
2001-14	Lake 10	Coral Creek Golf Inc	722		IRRLA
2001-15	Holes 5,6,7	Coral Creek Golf Inc			IRRLA
2001-16	Coral Creek 3	Coral Creek			OBS
2002-12	Palm Court 3	Palm Court Ass		0.151	IRRLA
2002-13	West Loch Cap 1	C&C Honolulu	450		UNU
2002-14	West Loch Cap 2	C&C Honolulu	450		UNU
2002-15	Coral Creek 1	Coral Creek	110	1.152	IRRG
2002-17	Coral Creek 2	Coral Creek	110	1.152	IRRG
2002-19	Lake A	Coral Creek	715	1.152	IRRG
2002-20	Hole 2	Coral Creek	1,450		IRRLA
2101-14	Honouliuli	U S Fish & Wildlife		0.432	IRRH



BROWNLIE & LEE

July 2, 2008

Mr. Greg Fukumitsu
Tom Nance
Water Resources Engineering
680 Ala Moana Boulevard, Suite 406
Honolulu, Hawaii 96813

Subject: **EWA WUP PERMIT**

Dear Greg:

We have been responsible for virtually all of the landscape and irrigation system design at Ewa by Gentry since 1990. Based on our 18 years of experience with this development and dealing with the requirement for low maintenance, drought and brackish water tolerant planting we have found through our water conservation efforts that the average daily irrigation requirement is approximate 1.0 gallons per square foot of planting area per week. We have established this irrigation water demand through both on site field experimentation and the following calculation:

Irrigation Application Rate Calculation

Ewa 15-year average annual pan evaporation rate:	86.56 inches per year
Less Ewa Gentry average annual rainfall (18.75-inches), derated 25%	<u>(14.06) inches per year</u>
Evapotranspiration Rate	72.50 inches per year

72.5 inches per year = 0.87 gals./s.f./week

15% irrigation inefficiency factor, high percentage of small irregular planting areas = 0.13 gals./s.f./week

Total weekly irrigation demand = 1.0 gals./s.f./week

We have found that the rainfall contribution to irrigation must be derated at least 25% based on field experience and the irrigation inefficiency factor is approximately 15% due in large part to the high percentage of small irregular planting areas within the housing parcels.

The irrigation well service areas are outlined on the Irrigation Master Plan prepared by our office. The bulk service area irrigation demand are as follows:

Landscape Architecture
Site Planning
Irrigation Consultants

City Financial Tower • 201 Merchant Street • Suite 1930 Honolulu, Hawaii 96813 • Tel: (808) 528-4363 • Fax: (808) 531-8191

EXHIBIT 15

<u>Area Well</u>	<u>Service Area</u>	<u>Gallons per day</u>
Area 35 Well	1,785,756 s.f.	255,108
Keaunui Well	1,572,305 s.f.	224,615
Sun Terra Tot Well	1,363,373 s.f.	194,768
Area 13 Well	258,825 s.f.	36,975
Area 45 Well	462,595 s.f.	66,085

If you have questions regarding this information, please contact me.

Sincerely,
BROWNLIE & LEE



Richard C. Brownlie, ASLA
Principal

cc: Darian Chun
Gentry Homes, Ltd.

PHONE (808) 594-1888



**STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813**

RECEIVED
FAX (808) 594-1865

08 DEC 2 A 9:10

COMMISSION ON WATER
RESOURCE MANAGEMENT

HRD08/4055

November 19, 2008

Denise Mills
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawai'i 96809

**RE: Request for comments on the proposed Water Use Permit Application (WUPA),
Pu'uloa Ground Water Management Area, O'ahu, TMKs: 9-1-69: 005, 9-1-102: 64,
9-1-116:13, and 9-1-136: 64.**

Aloha e Denise Mills,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter dated October 28, 2008. OHA has reviewed the project and offers the following comments.

OHA notes that the proposed use is for irrigation and landscaping purposes and that the applicant seeks to use brackish water for this purpose. OHA asks if the landscaping is with drought tolerant local or endemic species common to the area. If there has been little to no effort to reasonably conserve this scarce resource in terms of landscaping, it could cast this request in questionable or unreasonable lighting. If thirsty exotics are being watered, that would also not be compatible with the city Watershed Management Plan and Ewa Development Plan. (Ewa Development Plan, page 4-21)

The applicant is proposing to use a total of 582,783 gallons per day of water for irrigation. If these WUPAs are combined with the nearly identical WUPA No. 856, then this total goes up to 777,551 gallons per day. This amount of water for accessory irrigation should be scrutinized to ensure that the request is reasonable and the use is beneficial. Certainly we agree that potable water should not be used for this proposed purpose.

We request that the applicant use recycled water if possible, or be required to do so when it does become available for this proposed use. OHA notes that the Ewa Development Plan projects future nonpotable demand for this area to be 31 mgd. (Ewa Development Plan, page 4-

EXHIBIT 16

WUPA Nos. 855, 857
858, 859

19) The demand for this use is to be met with uses such as this proposal, from low chloride irrigation water sources. However, strategies in the city Watershed Management Plan for this area include development of infrastructure not currently in existence or proposed and sources which have since been abandoned such as the Kalaeloa desalinization plant. (Honolulu Advertiser article, 11-17-08 *Kalaeloa desalination plant put on hold*)

We request assurances that uses from this source will not adversely affect constitutionally protected Native Hawaiian uses in the area as protected in the state water code. We also ask if this nonpotable source is low in total dissolved solids that may affect water quality in the quantities requested. ?

Thank you for the opportunity to comment. If you have further questions, please contact Grant Arnold by phone at (808) 594-0263 or e-mail him at granta@oha.org.

‘O wau iho nō me ka ‘oia ‘i‘o,



Clyde W. Nāmu‘o
Administrator

PHONE (808) 594-1888



**STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813**

RECEIVED FAX (808) 594-1865

08 DEC 2 9:09

COMMISSION ON WATER
RESOURCE MANAGEMENT

HRD08/4053

November 19, 2008

Denise Mills
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

RE: Request for comments on the proposed Water Use Permit Application (WUPA), Pu'uloa Ground Water Management Area, O'ahu, TMK: 9-1-70: 132.

Aloha e Denise Mills,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter dated October 28, 2008. OHA has reviewed the project and offers the following comments.

OHA notes that the proposed use is for irrigation and landscaping purposes and that the applicant seeks to use brackish water for this purpose. OHA asks if the landscaping is with drought tolerant local or endemic species common to the area. If there has been little to no effort to reasonably conserve this scarce resource in terms of landscaping, it could cast this request in questionable or unreasonable lighting.

We request that the applicant use R-2 water if possible, or be required to do so when it does become available for this proposed use. We request assurances that uses from this source will not adversely affect constitutionally protected Native Hawaiian uses in the area as protected in the state water code.

Thank you for the opportunity to comment. If you have further questions, please contact Grant Arnold by phone at (808) 594-0263 or e-mail him at granta@oha.org.

'O wau iho nō me ka 'oia'i'o,

A handwritten signature in black ink, appearing to read "Clyde W. Nāmu'o".

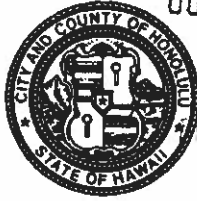
Clyde W. Nāmu'o
Administrator

WUPA No. 856

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII, 96813
PHONE: (808) 768-8000 • FAX: (808) 527-6743
DEPT. WEB SITE: www.honolulu.gov • CITY WEB SITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR



08 NOV 20 A10:14

HENRY ENG, FA/CP
DIRECTOR

DAVID K. TANQUE
DEPUTY DIRECTOR

2008/ELOG-2678 (TH)

November 18, 2008

Ms. Laura H. Thielen, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Subject: Water Use Permit Application, Puuloa Ground Water Management
Area, Ewa Beach, Oahu, Tax Map Keys: 9-1-116:013, 9-1-102:064,
9-1-136:064, and 9-1-069:005

We have reviewed Water Use Permit Applications (WUPA) 855, 857, 858, and 859
submitted by Gentry Homes, Ltd. and have the following comments to offer.

1. **WUPA 855:** The area identified by the TMK in Table 1 of the application is zoned A-2 Medium Apartment District as stated in Table 1. The proposed use of water for roadway landscaping irrigation in areas of the Ewa by Gentry development is consistent with supporting A-2 zoned areas of the Ewa by Gentry development. The proposed use of brackish caprock water is consistent with Section 4.2.1 of the Ewa Development Plan requiring (when necessary) a dual water system and non-potable water use to conserve potable water in the Ewa region. ✓
2. **WUPA 857:** The areas identified by the TMKs in Table 1 of the application are zoned R-5 Residential District, A-1 Low Density Apartment District, and P-2 General Preservation District as stated in Table 1. The proposed use of water for roadway landscaping and park irrigation in areas of the Ewa by Gentry development is consistent with supporting R-5, A-1, and P-2 zoned areas of the Ewa by Gentry development. The proposed use of brackish caprock water is consistent with Section 4.2.1 of the Ewa Development Plan requiring (when necessary) a dual water system and non-potable water use to conserve potable water in the Ewa region.

EXHIBIT 17

Ms. Laura H. Thielen, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
November 18, 2008
Page 2


3. **WUPA 858:** The areas identified by the TMKs in Table 1 of the application are zoned A-1 Low Density Apartment District as stated in Table 1. The proposed use of the water for roadway landscaping in areas of the Ewa by Gentry development is consistent with supporting A-1 zoned areas of the Ewa by Gentry development. The proposed use of brackish caprock water is consistent with Section 4.2.1 of the Ewa Development Plan requiring (when necessary) a dual water system and non-potable water use to conserve potable water in the Ewa region.
4. **WUPA 859:** The areas identified by the TMKs in Table 1 of the application are zoned R-5 Residential District and A-1 Low Density Apartment District as stated in Table 1. The proposed use of water for roadway landscaping and park irrigation in areas of the Ewa by Gentry development is consistent with supporting R-5 and A-1 zoned areas of the Ewa by Gentry development. The proposed use of brackish caprock water is consistent with Section 4.2.1 of the Ewa Development Plan requiring (when necessary) a dual water system and non-potable water use to conserve potable water in the Ewa region.

The locations of the two (2) existing and three (3) proposed wells, and the areas identified by the TMKs in all four (4) applications are not in the Special Management Area.

The Board of Water Supply requests contingency plans for well nos. 1901-08, 1900-24, and 2000-06, should the chloride levels of these wells exceed the 1,000 ppm CWRM limit.

Should you have any questions, please contact Tim Hata of our staff at 768-8043.

Very truly yours,


Henry Eng, FAICP, Director
Department of Planning and Permitting

HE: lh
p:DivFunction/WUP/2008elog2678

cc: Board of Water Supply, Attn: Glenn Oyama

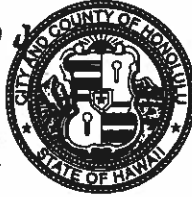
DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

WUPA No. 85

RECEIVED
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 768-8000 • FAX: (808) 527-6743
INTERNET: www.honolulu.gov • DEPT. WEB SITE: www.honolulu.gov/pp

08 NOV 12 P3:24

COMMISSION ON WATER
RESOURCE MANAGEMENT



MUFU HANNEMANN
MAYOR

HENRY ENG, FAICP
DIRECTOR

DAVID K. TANOUE
DEPUTY DIRECTOR

2008/ELOG-2679 (TH)

November 10, 2008

Ms. Laura H. Thielen, Chairperson
Commission on Water Resource Management
Department of Land and Natural Resources
State of Hawaii
Box 621
Honolulu, Hawaii 96809

Dear Ms. Thielen:

Subject: Water Use Permit Application, Puuloa Ground Water Management
Area, Ewa Beach, Oahu, Tax Map Key: 9-1-070:132

We have reviewed the application and have the following comments to offer.

The areas identified by the TMKs in Table 1 of the application are zoned R-5 and A-1 as stated in Table 1. The proposed use of the water for roadway landscaping and park irrigation in areas of the Ewa by Gentry development is consistent with supporting the R-5 and A-1 zoned areas of the Ewa by Gentry development. The proposed use of brackish caprock water is consistent with Section 4.2.1 of the Ewa Development Plan requiring (when required) a dual water system and non-potable water use to conserve potable water in the Ewa region.

The Soda Creek Well (Well No. 2001-05) and those parcels in Table 1 are not in the Special Management Area.

Should you have any questions, please contact Tim Hata of our staff at 768-8043.

Very truly yours,


Henry Eng, FAICP, Director
Department of Planning and Permitting

HE:js

p:\DivFunction\WUP\2008elog2679